THE UNIVERSITY OF QUEENSLAND

AUSTRALIA

Australian Residential Aged Care Foodservices

Menu design, quality and standards – a time for action

Karen Lynette Abbey

Bachelor of Science (Hons) Human Nutrition Graduate Diploma Nutrition and Dietetics Masters Health Science (HSM)

A thesis submitted for the degree of Doctor of Philosophy at

The University of Queensland in 2015

School of Human Movements and Nutrition Studies

Abstract

Residential aged care homes (RACH's) operate in a very complex systems model with many systems having to work together. One of the largest of these is the meal environment system. The complexity of resident care, heterogeneous nature of the resident population, and the quest to provide meals within a home-like environment for a group of people sharing a common space while still recognising the needs of the individual is no small challenge.

A comprehensive understanding of the significance of the meal environment system in RACH's is mostly unknown in Australia. This thesis provides the first unique look at the system which underpins the way the meal environment system functions. The Aged Care Standards are the governing system controlling the meal environment. For any system to work and achieve the nominated system goals, such as providing high level of quality care for the residents needs and allow them to maintain a high quality of life.

One of the most important controlling aspects to the meal environment system is the menu, which is the underpinning aspect for any foodservice operation. Through a critical realism case study model the menu and the meal environment system was examined utilising a national survey, paper base audits, observational data collection and analysis of the Aged Care Standards.

The findings indicated that the Aged Care Standards underpinning the control of the meal environment system are compromising the way in which this system operates. The outcomes- based nature of the expected outcomes and associated supporting documents allows for a wide interpretation of RACH's within the meal environment system. The outcome natures of the standards does not set a strong minimum compliance and this is evident by the lack of information written on menus, choice provided by the menu being inconsistent, poor compliance to any relevant tools which are available to support RACH's. Observational data further highlighted the inconsistent nature of standard interpretation of service delivery, high plate waste, poor food consumption, and temperature of meal, dining room set up, menu mistake and the poor communication of the menu.

While menu planning for the general menu was laced with inconsistency and poor planning, the state of the vitamised/puree menu highlighted the plight of residents who received no choice with the menu frequently utilised left-overs as well as the same meals twice in one day. This was substantiated by the reduction in variety of foods and increased menu repetition. The Aged Care Standards have minimal in terms of expected outcomes which support the menu planning for vitamised/puree meals.

For the meal environment system to be successful and operational, the Aged Care Standards underpinning this system need to be re-written or supported with guidelines which ensure that the meal environment system operates with a minimal standard eliminating factors as described in this thesis. Clearly, the current interpretation of the existing framework allows too much variation within the system to ensure quality service delivery to all residents.

It is important to highlight that all homes and meal environment staff work to their very best to deliver high level of care to residents in a very complex and largely misunderstood system. The issues identified the failing of the Aged Care Standards to really embrace the complexity of the meal environment system as well as have a robust system which sets a standard of service delivery to optimally support both residents and staff. Therefore, improvements to the standards for menu design, support for the delivery of the system and quality of the services across Australia were outcomes from this research. It is only from making these improvements that all residents will be equal within the meal environment system.

Declaration by author

This thesis *is composed of my original work, and contains* no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my thesis.

I have clearly stated the contribution of others to my thesis as a whole, including statistical assistance, survey design, data analysis, significant technical procedures, professional editorial advice, and any other original research work used or reported in my thesis. The content of my thesis is the result of work I have carried out since the commencement of my research higher degree candidature and does not include a substantial part of work that has been submitted *to qualify for the award of any* other degree or diploma in any university or other tertiary institution. I have clearly stated which parts of my thesis, if any, have been submitted to qualify for another award.

I acknowledge that an electronic copy of my thesis must be lodged with the University Library and, subject to the General Award Rules of The University of Queensland, immediately made available for research and study in accordance with the *Copyright Act 1968*.

I acknowledge that copyright of all material contained in my thesis resides with the copyright holder(s) of that material. Where appropriate I have obtained copyright permission from the copyright holder to reproduce material in this thesis.

Publications during candidature

Conference abstracts

Abbey, K., Wright, O., & Capra, S.,(2010) – National Menu Survey – a first for Australia developing new menu standards for residential aged care 9th National Emerging Researches and Ageing Conference Newcastle Conference proceedings page 39

Abbey, K., Wright, O., & Capra, S., (2011). Inaugural National Foodservice Menu Survey – examining the extent of variety in aged care menu planning. 29th National Dietitians Conference Sydney Conference proceedings page 29

Abbey K., Wright, O, Capra, S., (2011) Menu Planning Standards in Residential Aged Care in Action – International Comparison. 10th National Emerging Researchers and Ageing. Sydney NSW University of Sydney Conference proceedings page 24

Abbey K., Wright, O; Capra, S., (2011) Aged Care Facilities in Australia: Dietitians Supporting Foodservices – A Required Service 10th National Emerging Researchers and Ageing. Sydney NSW University of Sydney Conference proceedings page 26

Abbey, K Wright, O & Capra, S (2014). Foodservices a Vital Marketing Tool For Residential Aged Care Homes. AAG and ACS Regional Conference. Port Macquarie proceedings page 19

Abbey K, Wright, O & Capra, S, (2014). Vitamised meals – poor choice, variety and quality the forgotten residents 2014. 47th National Australian Gerontology Conference Adelaide. 50 Not out aiming for a century conference proceedings page 33

Conference presentations

National Menu Survey – a first for Australia developing new menu standards for residential aged care. ERA 2010 Conference – New Castle NSW

Snap shot of aged care foodservices, 2010. Aged Care and Community Conference September

Menu planning standards in action – international comparison 2011 Dietitians Association of Australia National Conference Adelaide

Residential Aged Care Standard – menu planning in Australia and what happens internationally 2011 Dietitians Association of Australia National Conference Workshop Adelaide

Creating a home – Foodservices in Action in Aged Care 2011. Aged Care Community Victoria (ACCV) Kitchen Seminar .Melbourne

Aged Care Facilities in Australia : Dietitian Supporting Foodservices – A Required Service, 2011 ERA 10th National Emerging Researches in Ageing Conference November 2011 –NSW University Sydney

Menu planning standards in Residential Aged Care in Action – International Comparison 2011 ERA conference November NSW University Sydney

What's on Aged Care Menus and in-depth look at current menu planning in Australian Aged Care. ACCV kitchen Seminar Melbourne

Dietary Guidelines why they are not appropriate for aged care (2013) Dietitians Association of Australian National conference workshop Canberra –

Dining room new frontier for efficient services (2013). Leading Aged Services Australia National Congress Sydney

Dining room the make or break point of the meal services (2013). Institute of Hospitality and Health Care National Conference Adelaide

Consumer Directed Care – Foodservices potential and opportunities to consider (2014). Tri-state conference Leading Aged Care Services Australia (LASA) Albury

Dining room operational efficiency (2014). Nurse Practices Managers Conference Gold Coasts

Dining room the heart of the home – social aspects of the dining room (2014). Better practice Brisbane

Design considerations are crucial in creating a home dining room in aged care both now and in the future (2014) Institute of Hospitality and Health Care National Conference Melbourne

Dining room heart of the home (2014) Better practice conference Hobart

Vitamised meals – poor choice, variety and quality the forgotten residents (2014). National Australian Gerontology Conference Adelaide

Publications included in this thesis

No publications included

Contributions by others to the thesis

"No contributions by others."

Statement of parts of the thesis submitted to qualify for the award of another degree

"None".

Acknowledgements

This thesis has been a journey of discovery and I would like to thank the following people for their support throughout this process

Deirdre Hosking for the hours of support and guidance thank you will never been enough for all the reading and help with this thesis

Thank you for my parents and sister Susanne for all their encouragement
Thank you to all my friends especially Kathy and Mark for the endless phone call of support and encouragement

Thanks to Sandra and Olivia for support encouragement and help through what has been a rewarding and skill building adventure.

And lastly all the aged care homes that took part on the studies and open their door to allow me to come in and collect data.

Keywords

Critical realism, Foodservice, menu design, quality, Aged Care Standards, residential aged care, aged care homes

Australian and New Zealand Standard Research Classifications (ANZSRC)

ANZSRC code: 111199, Nutrition and Dietetics not elsewhere classified, 70%

ANZSRC code: 120399, Design Practice and Management not elsewhere classified 15%

ANZSRC code: 090899, Food Sciences not elsewhere classified, 15%

Fields of Research (FoR) Classification

FoR code: 1111, Nutrition and Dietetics, 70%

FoR code: 1299, Design Practice and Management, 15%

FoR code: 0900, Food Sciences, 15%

Tables

Figures

Photos

Glossary

Words	Definition
Aged care funding instrument (ACFI)	Funding instrument used to determine level of care
Bulk serve	Food served in bulk either from baine marie, hot box, straight from kitchen/kitchenette
Controls	Internal External
Cook-chill	Method in which menu items are partially cooked, rapidly chilled, held in chilled storage, and reheated just prior to service
Cook-freeze	Method in which menu items are partially cooked, rapidly frozen, held in freezer storage, and reheated just prior to service
Cook-fresh (serve)	Method in which menu items are prepared and hot held for a short period of time before service on the same day
Daily food serve specification	How many serves should be included on the menu for food items eg 5 serves of vegetables per day
Dietary specifications	Provides guidelines on specific nutrients eg high calcium desserts or high fibre breads
Dining room specifications	How dining rooms should be set up to enhance the meal service
Feedback	Those processes by which a system continually receives information from its internal and external environment
General menu	Menu used for the majority of residents regardless of diet
Input	Any human, physical or operational resources required to accomplish objective of the system
Input based standards	Standards are set with defined expected compliance
Level of care	Three levels of care which loosely operate in aged care
Meal component	Part of the menu pattern – what is provided at meal times
Meal Environment System	Total system from procurement to the meal being eaten by a resident
Memory	All stored information that provides historical records of a systems operation 1
Menu	List of items available for selection by a customer and the most important internal control of the foodservice system
Menu cycle	Time frame in which the menu runs before it starts at the beginning and can be from one week to twelve weeks depending on the cyclic length used by the RACH
Menu item specification	Provides guidelines on what the menu should be providing across the menu pattern eg bread for all main meals
Menu pattern	Outlines what the menu supplies over the day or for each meal time
Menu planning	The process by which menus are planned
Menu planning specifications	Guidelines on how the menu should be set up for design – written information
Menu seasonality	Refers to what season the menu has been designed for
Menu success	When it delivers to meet the expectations of the clients
Minimum Data Set	MDS
Nutritional menu planning	Involves planning menus that provide the nutrients, ingredients, and kilojoules required for healthy living, based on consumers' needs and/or demands

Outputs	Results of transforming input into achievement of a system's goals 1
Output based standards	The standard is open to interpretation
Poor feeding practice	Poor feeding into the mouth (inappropriate spoon) feeding more than one resident at a time, not communicating with resident, standing over resident to feed
Portion size	Amount size of food served in terms of grams or millilitres
Repetition	When food items are repeated
Level of repetition	The amount of repetition which occurs within the menu
Residential Aged Care	RAC
Residential Aged Care Homes	RACH's
System	Collection of interrelated parts or subsystems unified by design to obtain one or more objectives
System theory (approach)	Keeping the organisations objectives in mind throughout the performance of all activities
Table is served together	Meal are served together so that all residents can eat at the same time
Texture modification	Refers to the practice of modifying the texture of the food into either cut up, soft, minced or vitamised/puree (smooth consistency)
Total tray meal delivery system	Meals are plated in the kitchen/kitchenette and delivered to the dining room or residents room on a tray
Thermal support system	Physical system which supports meal delivery to ensure that meals are served hot or cold
Transformation	Any action or activity used in changing inputs into outputs
Vitamised/puree menu	Menu used for texture modified meals

Contents Page

CHAPTER ONE

RATIONALE, RESEARCH QUESTIONS, AIMS, OBJECTIVES, SIGNIFICANCE AND CONTRIBUTION OF STUDY PROGRAM

1.0 RATIONALE

This study uses a critical realism case design to describe menu design and the meal environment in aged care homes. Through this method it examines the aged care standards and identifies ways to improve the system.

The Australian population is ageing. It is estimated that by the year 2050 1.8 million people will be over the age of 85 (Productivity Commission Report 2011), placing an increasing burden upon aged care services (O'Neill, 2010). Residential aged care homes (RACH) provide twenty-four hour care and support services to individuals with a wide range of care needs and health problems (Productivity Commission Report 2011). Aged care itself is a complex system, highly regulated and is subject to scrutiny and compliance for funding arrangements. The government "aims to ensure that all frail older Australians have timely access to appropriate care and support services as they age … through a safe and secure aged care system (DoHA 2009, p. xi). Aged care homes work within the Aged Care Standards which underpins the system frame work. Within the system framework many sub-systems need to operate together to maintain the overall goal of quality of care and quality of life (Braithwaite, 1998). The meal environment sub-system goal is to provide adequate food and nutrition.

Any meal environment is a complex open system impacted upon by both external and internal forces. The menu underpins and is a major controlling factor of system. In RACH in Australia, this is set out by the aged care standard 2.10 that is "residents receive adequate nourishment and hydration" (Standard two) and 4.8 "Hospitality services are provided in a way that enhances residents quality of life" (Standard four). With over 200,000 residents in RACH across Australia that is no small task as nutrition is essential for quality of life (Bale, 2009) and food is one of the most important aspects of a resident's day for social, physical and psychological reasons (Ball, Whittington, Perkins, Paterson, Hollingsworth, King & Combs, 2000; Saunders, Stattmiller, Kirk, 2007). Therefore it is critical that the meal environment operates well to achieve these goals.

The meal environment is made up of many aspects and its impact upon the menu is not well understood in Australia. Menu planning in aged care homes is unique as it must meet the need of

the individual's food preferences to ensure well-being (Productivity Commission 2011). This must be done within a home-like environment, with a quality of life focus as residents live out the remainder of their lives. The challenges faced by RACH are to deliver such care responding to each resident's frailty, self-care and mobility level. This places pressure on the system to provide individual care within a framework of regulation and compliance (Castellanos, 2004). Compromised nutritional care may result from the reduced autonomy residents have to make food choices and meal services within a setting of institutional routine (Clark, 1998). Malnutrition in aged care homes is prevalent in Australia (Banks, Ash, Bauer, Gaskill, 2007; Wright, Capra & Connelly, 2010) and internationally (Lengyel, Whiting & Zello, 2008; Skates & Antony, 2012). It reduces quality of life (Gaskill, Black, Isenring, Hassall, Saunders, & Bauer, 2008; Aghdassi, McArthur, Liu, McGeer, Simor, Allard, 2007) and may contribute to increased morbidity and mortality (Matthews, 1992). Studies have been carried out on eating assistance (Keller, 1993, Akner & Floistrup, 2003; Sullivan, Johnson, Bopp & Roberson, 2004) meal duration (ADA report 2005), reduced intake (Blaum, Fries & Fiatarone, 1995; & Steel, Greenwood, Ens, Robertson & Seidman-Carlson, 1997) and reduced appetite (Akner & Floistrup, 2003, Christensson, Unosson, & Ek, 1999; Schmid, Weiss, Heseker, 2003), highlighting how essential it is for the meal environment to be adaptable to the needs of residents.

To ensure residents are receiving good nutritional care the menu must be supported by the meal environment. The purpose of this study was to examine the meal environment in aged care and to undertake this review utilising the system theory theoretical framework with particular reference to menu planning. The research program was conducted utilising a critical realism design utilising six studies to examine the following research questions.

1.1 Rationale methodology

This thesis has focused on the management and delivery of quality foodservices within the aged care sector. The paradigm used is that of Critical (pragmatic) realism using Triangulation of methods (Wynn & Williams 2012) with the system approached providing the framework which is a well recognised and accepted model for the management of foodservices (Vaden, 1980). This paradigm originated in the writings of Bhaskar (1978), who stated that real structures exist independent of the observed (Wynn and Williams 2012). Critical realism as a research method has increased not just for the social sciences but for other disciplines. With the basic concept refined and extended by numerous authors (Easton, 2010, Archer, 1995, Collier, 1994). Critical realism examined the mechanism, events and experiences making up any environmental system (Wynn & Williams, 2012). It ascertains that there must be a reality out there and systems are the mechanism

as to why events occur which can be measured and observed (Easton, 2010). It allows for research to be developed and supports in-depth causal explanation of phenomena taking into account wide range of information, technology, social, organisational and environmental factors which may play a role in the occurrence (Wynn & Williams 2012). The main assumption of realism is that a reality exists in its own right, which is independent of our awareness and detached from our perceptions, and that as it is independent, it is possible to make causal statements in a non-experimental research methodology. Observations of the foodservice system using this paradigm is important to increase our understanding of this system. Several perceptions of the reality of this system need to be triangulated to gain the level of understanding and include the combination of different paradigms such as science and social science, qualitative and quantitate techniques (Lach, 2014). The paradigm critical realism has been primarily used in nursing researched to date. A search of the literature using the search terms of critical realism, food service, foodservices and there were six found none of which were relevant to foodservices in aged care.

Such critical (pragmatic) realism methods can provide a new approach to the development of knowledge (Whnn & Williams, 2012) within foodservices. The foodservice system framework was used as it provides a useful framework for pinpointing the individual components and where system issues lie. Research in foodservice management is relatively rare in terms of the foodservice system interacting with its environment. In this framework, the system is an open system which impacts and is impacted upon, by its environment (Gregiore, 1913). A search of literature of research on foodservice management systems revealed very few articles, however a very recent article combined the systems framework with the social practice model with ethnography (Goonan, Mirosa, Spence 2015). So while this study did not use the terms critical realism the approach was similar to work carried out in this thesis. Such approaches to data collection utilising both qualitative and quantitative including surveys, audits, material analysis and observations data. It is the depth of collection techniques which are used with critical realism which affirms the rigor of the technique according to Sayers (2000) and is consistent with critical realist ontology (Easton, 2010).

The critical realist case approach is particular well suited for complex phenomena such as organisational system. The approach to developing causal links may require the researcher to move boundaries within the investigation in response to changes within the boundaries. The design of the research question(s) revolves around discovering what causes the event (mechanism/structures) with phenomenon under study (Easton, 2010). Matter of working out the entities/objects that characterise the phenomena being studies. Once the quantitative survey analysis was finished case method approach was undertaken including examination of the menu implementation across,

adherence to accreditation standards and menu formulation guidelines. A qualitative case study approached addressing the meal environment in situ was selected. The environments examined were deliberately chosen[‘ to be as “different” as possible, to yield maximum information. Once information saturation was achieved no further cases were included. The details of these cases are in Chapter six.

How is the meal environment system functionally operating in aged care?

What is the overall state and quality of the menu and its planning within the meal environment in Australia residential aged care?

Purpose

To examine the meal environment system, to provide robust evidence to inform change to policy and practice.

1.2 STUDY ONE – NATIONAL MENU SURVEY (Chapter three)

1.2.1 Research questions

How do foodservices operate within Australian residential aged care in terms of production and delivery of meals?

How is menu planning and design currently carried out in residential aged care in Australia?

1.2.2 Objective one:

To determine how foodservices and menus are planned and designed in residential aged care Australia using survey methodology. To create a survey to capture information pertaining to foodservice and menu design. This survey will inform current practice and will help shape the other studies.

1.2.3. Significance:

There are few published papers relating to the way in which foodservices operate or menus are planned in RACH's in Australia. Very little is known regarding the types of production and delivery systems currently used and there is only variable information available about the menu patterns in terms of design or how homes undertake the menu planning process. Survey design was used to cover the vast distance of Australia to provide an opportunity for all aged care homes to participate.

1.2.4 Expected outcomes and contribution to the field

Data will be available outlining foodservice operations in RACH, including menu pattern design, cycle length, seasonality, portion size data and guidelines and barriers to menu planning. For the

first time in Australia, there will be some understanding of how aged care foodservices operate and plan menus.

1.3 STUDY TWO – MENU ANALYSIS (Chapter four)

1.2.1 Research question

How are menus currently planned in regards to written information, integration, variety, choice and repetition and menu balance?

1.3.2 Objective two:

To examine the information which is currently written on menus, integration, variety, choice and repetition in menu design by examining menus which were submitted during the data collection from the National Aged Care Menu Survey for the general menu.

1.3.3 Significance:

This study builds on from study one to further explore menu design. Little data could be found regarding choice or repetition in menu planning in this sector. This is important as menus in aged care often provide the sole source of nutrition to residents. Menu choice is a quality factor essential for maintaining resident's autonomy and independence. Repetition of food items could lead to unbalanced menus and reduced food variety. The menu is a communication tool and therefore should provide information of what foods and fluids are being provided during the day. Menu planning is central to the meal environment system and therefore as there are no menu planning standards/guidelines within the current aged care standard this study will investigate how aged care facilities interpreted menu planning and highlight gaps within this system.

1.3.4 Expected outcome and contribution to the field:

Menu analysis will determine the level of information currently being written on menus, integration, variety, current choice used in menu planning and repetition for the general menu. This will provide some guidance into suggested improvement to the aged care standards/expected outcomes so that aged care homes can plan menu with a consistent framework.

1.4 STUDY THREE – STANDARDS AND GUIDELINES AUDIT (Chapter five)

1.4.1. Research Question

How does menu planning in Australia currently measure against available standards and guidelines for portion control, daily food specifications, menu item specifications, dietary food specifications,

dining room parameters, menu cycle, menu planning guidelines specification and texture modification specifications.

1.4.2. Objective three:

To examine and access, using current menu planning standards and guidelines, how menu planning in aged care compares to these standards in terms of meeting compliance and relevance of the standard/guidelines. This was carried out using the same menus from study two and portion size data obtained from the national menu survey.

1.4.3 Significance:

In Australia, there are currently five menu planning standards and guidelines which could be used by aged care homes. These outline portion sizes of food items, daily food serves, food item specifications, dining room, cycle menu and menu planning guidelines. Not all standards and guidelines have all the above features. To date, no information could be found regarding how these standards and guidelines have been evaluated and how menus using these standards and guidelines would comply with the specifications

1.4.4 Expected outcome and contribution to the field

This study will contribute to understanding compliance with standards and guidelines used in menu planning and how they are utilised in the meal environment to plan menus. Using this approach, the difference between the tools and what relevance they have for menu planning with the aged care sector will be examined.

1.5 STUDY FOUR – MEAL ENVIRONMENT OBSERVATIONS (Chapter six)

1.5.1 Research Questions

Where in the meal environment do the impacts occur in RACH's that reduces the capacity of the menu to be successful?

Success is when all residents have the best chance/opportunity to eat a meal and drink fluids within the meal environment.

1.5.2 Objective four:

To examine the meal environment utilising the Foodservice and Meal Environment Tool (FAMET) in RACH's to determine factors that could limit the menu success at meal times by plate waste, meal consumption and menu analysis for general meals.

1.5.3 Significance:

For the meal environment to be successful and for residents to have the best opportunity to consume enough food and fluids, many factors within the meal environment system have to work together. Very little is known regarding the meal environment, how the menu functions and what factors could impact upon the menu success. The Australian aged sector operates within a highly regulated framework. Little is known regarding the expected outcome for the meal environment s and the menu and how these are managed within this complex system.

1.5.4. Expected outcome and contribution to the field:

Observational data will explore the areas of compliance/noncompliance and the impact upon the system. Menu analysis will determine the quality of design for the general menu. Development of a meal environment observational tool can be used as an audit tool within this environment.

1.6 STUDY FIVE – VITAMISED/PUREE MENU ANALYSIS (Chapter seven)

1.6.1 Research Question

What is the quality of the vitamised/puree menu planning within the meal environment?

1.6.2 Objective

To take the information gathered from the other studies and to centralise into a single case study to run a parallel analysis to the general menu. This enables a comparison to be undertaken when exploring the meal environment for its operational capacity within the system utilising an essential part of menu planning required in aged care.

1.6.3 Significance:

In Australia and from across the world, very little could be found in the way of vitamised/puree menu planning information. This also allows for a quality comparison to be undertaken giving insight into this menu planning alteration and what happens in the meal environment when a dietary modification is required.

1.6.4 Expected outcomes and contribution to the field

Provides a case study comparison between the general and vitamised/puree menu to inform practice.

1.7 STUDY SIX – AGED CARE STANDARDS ANALYSIS OF MEAL ENVIRONMENT SYSTEM (Chapter eight)

1.7.1 Research question

What is the functionality of the documentation pertaining to the meal environment system within the frame work of accreditation?

1.7.2 Objective

To use survey, audit and observational data collected throughout these studies to examine the meal environment system to examine the interpretation of the standards.

1.7.3 Significance

This will enable the meal environment system to be examined in terms of how it is functioning in line with the expected outcomes and other documentation available to be used to support this system. Very little is known in regards to how the standards and other supporting documents are being interpreted by homes. This is crucial to ensure a standard level of quality care.

1.7.4 Expected outcome and contribution to the field

Results will provide a sense of how the meal environments are functioning within the framework of the aged care sector.

1.8 SUMMARY

The menu design, quality and standards are the focus point being studied within the meal environment. Each study utilises the system theory which provides an opportunity to understand the relationship between all aspects of this system, while focussing on the ultimate outcome of delivering nutritional care which enhances the quality of life of residents.

CHAPTER TWO - LITERATURE REVIEW

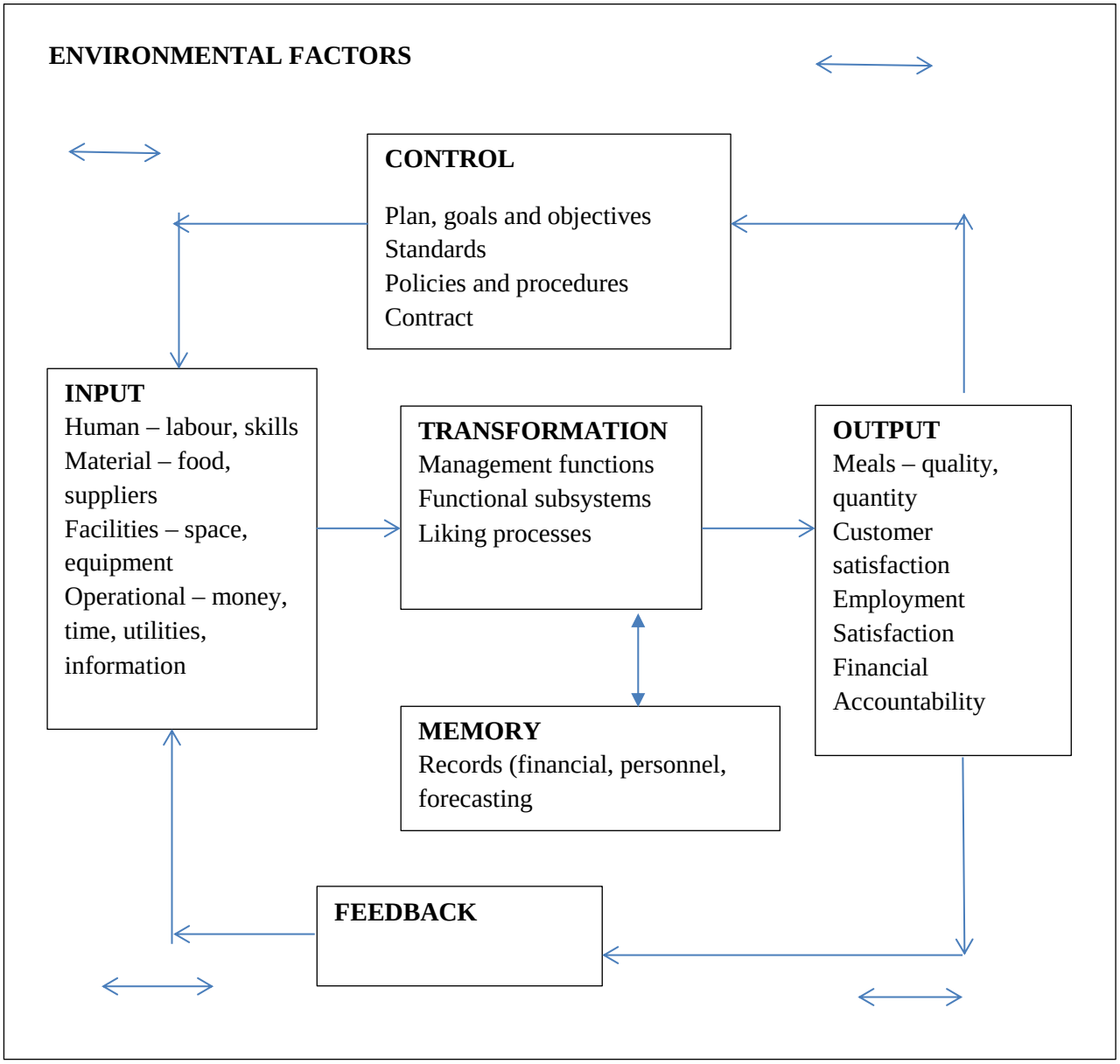
2.0 INTRODUCTION

Residential aged care homes (RACH) are by nature a complex set of systems competing to undertake the care of each resident. RACH systems include care, recreation and lifestyle, management, finance and the meal environment system. Each resident is a competing force within the system due to their physical, health and food requirements. The ultimate goal of RACH is to maintain quality care and ensure that residents are receiving services which match the needs to their quality of life. The meal environment is essentially made up of four main components : the menu, the production, meal delivery system and the dining room. Its role is critical as food is central to all residents in care and has physiological, psychological, social, cultural and symbolic meaning and value (Kayser-Jones, 2002). Food is often the one aspect in aged care where residents have some level of control and provides forward focus and meaning in their daily life. The meal environment requires considerable co-ordination between staff, equipment and services to meet its goals.

2.1 OVERVIEW OF THE SYSTEM THEORY MODEL

The General Systems Theory provides a framework to explain the interactions and interrelationships that occur between specific components within an organisation and within its environment (Lengyel, Zello, Berenbaum, Henry, Whiting 2003, Singh, 2010). The systems theory was first used in the mid 1900's by Austrian biologist, Ludwig von Bertalanf, and by the mid 1960's the approach was being used to enable managers to evaluate current practices and impacts of change on the foodservice hospital model (Spears, 2000, Lengyel, et al, 2003). The system theory provides a model by examining sub-systems and their interrelationships, a method of analysis enabling managers to make the best choice for the system and ultimately how the system will be managed within the organisation (Johnson, Kast & Rosenzweig, 1973, Spears, 2000). Using this theory Vaden, (1980) proposed a model for the foodservice comprising of six components : internal and external controls, inputs, transformations, outputs, memory and feedback systems (diagram 2.1). This model indicates that a foodservice system is affected by and impacts upon its environmental context. The gaps between arrows represent the permeable boundary between the system and its environment (Vaden, 1980).

Figure 2.1 – Foodservice system model



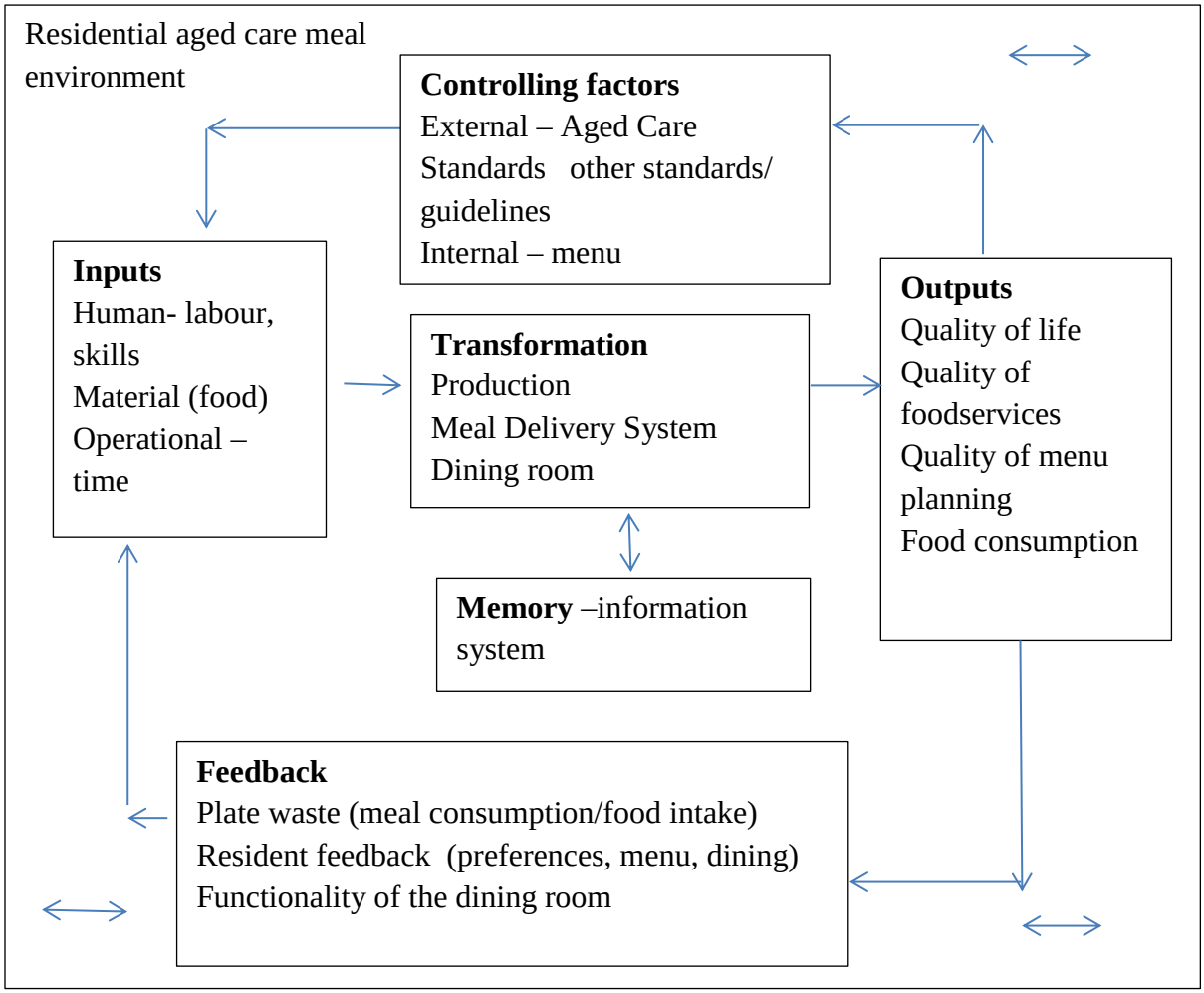
Adapted from A Model for Evaluating the Foodservice System by Vaden, 1980. Manhattan, KS: Kansas State University.

2.2 CONCEPTUAL FRAMEWORK – SYSTEM THEORY MEAL ENVIRONMENTS

The Vaden (1980) model has been used to provide a conceptual frame work for this literature review as it is structural in its terminology and maps out foodservices to encompass the components of the meal environment as shown by figure 2.3.

The primary focus for the aged care meal environment is to provide residents with meals that meet their social and nutritional needs. Central to any meal environment is the menu. However, menu planning and design cannot work in isolation and factors external and internal to the meal environment make this an open system (Spears, 2000).

Figure 2.2 Examination of the system theory within the meal environment



Adapted from A Model for Evaluating the Foodservice System by Vaden, 1980. Manhattan, Kansas State University

2.3 ENVIRONMENTAL OVERVIEW - RESIDENTIAL AGED CARE AUSTRALIA

As an open system, to understand this environment the drivers in the aged care industry and how aged care functions within Australia need elucidation.

2.3.1 Aged care population Australia

It is estimated that over the next 40 years the number of Australians aged 85 and over is to quadruple, from 0.4 million in 2010 to 1.8 million by 2050 (Productivity Commission Report 2011). Most older people are living independent active lives, however, a small proportion have complex health and medical needs requiring residential aged care and this is projected to rise by the year 2050 to 8% of the population (McDonald, 2009; Productivity Commission Report 2011). Increasing longevity is associated with higher prevalence of chronic disease, more prolonged illness, and complex comorbidities to manage. (O'Neill, 2010).

2.3.2 Residents in aged care

2.3.2.1 Heterogeneous population

Caring for residents in aged care is complex and requires consideration of the care of the individual. The population group itself is heterogeneous meaning that within a home there will be residents who need some support for activities of daily living and there will be some residents where the care needs become heavier due to their frailty, decreased functionality, cognitive capacity, social behaviour and disease state (Barr Chrysomilides, Willis & Beattie, 1983; Gray-Donald, 1995; Bale, Buhr, Hawk, Evanko & White, 2007; Productivity Commission Report., 2011). Nursing homes face challenges firstly to maintain the home-like environment for residents and secondly to support the residents' ability to eat enough food. (Castellanos, 2004). Each person in the home will have their own unique needs interfacing with an organisational structure which is striving to meet those needs while trying to conform to a strict set of government standards and regulations (Castellanos, 2004). By the very nature of a home population, menu planning for a group while catering for the individual is a constant challenge within the meal environment system.

2.3.2.2 The ageing body

The World Health Organisation classifies those aged 60-74 as elderly 75-89 old and over 90 very old (Blade, 2002). In Australian aged care, 70% of residents in high care were aged 85 years or older in 2010 (Productivity Commission Report, 2011). Elderly people become nutritionally at risk for a variety of reasons including sensory impairment, oral impairment, digestion issues, polypharmacy, physical decline, malnutrition and dementia (Blade, 2002). Everyone will age differently and that is the difficulty with this heterogeneous population (Labossiere & Bernard, 2008) placing strain upon their nutritional requirements, increasing the demands upon the meal environment system to support and assist residents to consume enough food and fluids. This in turn affects how menus are planned to meet the challenges of this diverse group (Lengyel et al, 2003).

Challenges to this diverse group are increased by the following.

A loss of sensory function and the ability to identify and enjoy food occurs as people age (Bale, et al 2007; Dunn-Waters, Howard & Bible; 2004; Parker & Chapman, 2004). Taste is essential for maintaining good nutrition and preventing nutritional decline (Parker & Chapman, 2004). Loss of smell and taste highlights the need to ensure that menus are full of flavour and not restrictive with reduced fat, salt and sugar (Richie, 2002). The number of natural teeth and poor fitting dentures results in a significant impact upon nutritional status (Chen, Shilling, & Lyder, 2001; Richie, 2002; Walls & Steele, 2004; DiMarie-Ghalili & Amella, 2005). Various oral conditions, including tooth loss, pain and discomfort associated with caries, periodontal disease, poorly fitting prosthesis (Rauen, Moreira, Calvo & Lobo, 2006) and xerostomia dry mouth (Chen et al, 2001; DiMaria-Ghalili & Amella, 2005) can lead to inadequate nutritional status or the need for texture modified meals.

The gastrointestinal system can compromise body weight and nutrition in the elderly due to difficulties with food ingestion, intestinal absorption, nutrient metabolism and constipation (Omran & Aneed, 2007). Gastric reflux, increased difficulties with swallowing, ulcers, and decreased saliva production (xerostomia) can reduce the pleasure of eating. These changes influence many older persons' food intake by making the chewing and swallowing process more difficult, reducing the enjoyment of eating (Hall & Wendin, 2008) or the need for texture modified meals and thickened fluids (Germain, Dufresne & Gray-Donald, 2006).

Polypharmacy poses a challenge in aged care (Parker & Chapman, 2004). Residents in aged care have more complex medical conditions which require a range of medications. On average, residents are on at least 8 medications per day and many of these have side effects of nausea and food aversion leading to decreased food intake (Wellman, 1999; Thomas, 2007). Medication related symptoms that may affect nutritional status include nausea/vomiting, altered taste and smell, dry mouth, dysphagia, early satiety, reduced feeding ability through sedation, diarrhoea and constipation (Bale, et al, 2007). Many drugs change taste and smell for example lipid lowering, anti-histamines and anti-inflammatory drugs (Donini, Savina & Cannella 2003; Hickson, 2006). The use and distribution of medication in aged care often interferes with meal times by disrupting the dining service. It seems to be a common practice in aged care to give residents their medication in the dining room during meal times, therefore, reducing staff ability to assist residents to consume their meals (Innes-Farquhar, 2000) and handing out medication is a clinical practice (Leppert, 2007).

Residents suffer from various degrees of pain, bone and joint problems, reduced mobility, leading to reduce ability to manage activities of daily living (Chernoff, 2006). In aged care there is a reported culture of residents spending time and eating all their meals in bed (Kayser-Jones & Schell, 1997). Insufficient space in the dining area design can impact upon the dining room usage (Kayser-Jones & Schell, 1997). Studies have shown that a resident served their meal in bed can be the result of staffing, were not positioned properly, their food was served cold, there was little social interaction during mealtime and sometimes residents were not fed at all. And often these residents were the most physically and cognitively impaired meaning that they could not make a choice eating location (Kayser-Jones, 2000; Kayser-Jones, 1997; Kayser-Jones & Schell, 1997, Simmons, et al, 2005. Nijs et al 2009)

2.3.2.3 Dementia and the meal environment

Dementia is an umbrella name for a wide range of diseases which affect the cognitive function of the brain. While this review has not targeted other diseases affecting the elderly, due to its rapid and expected increase to 460,000 by 2041 will increase the pressure on the meal environment (Brodaty, Draper & Low, 2003; Productivity Commission Report, 2011). Lower rates are seen for the age group 70-75 (3.5% men and 3.3% women), compared to age 85-89 (21.4% men and 24.4% women) and by the age of 95, (37.2% men and 47.3% women) (Productivity Commission Report, 2011). Residents diagnosed with dementia experience difficulties in eating including lack of appetite, loss of ability to recognise food, eating inappropriate foods, trouble transferring food from the plate to the mouth and difficulty swallowing or chewing food (Manthorpe & Watson, 2003).

As the physical and mental decline occurs it affects the way in which a resident interacts with meal times, not recognising foods or remembering how to eat, requiring additional staff resources to ensure adequate food and fluid intake within the meal environment. Studies of unintentional weight loss in dementia units suggest that a deficit within the meal environment system to provide adequate feeding support as the cause, rather than factors relating to the dementia itself (Hickson, 2006).

2.3.2.4 Malnutrition in the meal environment

Malnutrition is the major nutritional problem with nursing home residents (Cowan, Roberts, Fitzpatrick, While & Baldwin, 2004) highlighted by table 2.5. Malnutrition not only affects quality of life, but it can lead to weight loss, ill-health, risk of infection, slow wound healing, functional decline, chronic disability both physical and cognitive and mortality (Buckler, Kelber & Goodwin, 1994; Cowan, et al, 2004; Evans, Crogan & Shultz, 2005; Gaskill, et al, 2008). The frail elderly have very different nutritional requirements to the well elderly (Gray-Donald, 1995; Australian

Guide to Healthy Eating, 2013). Frailty is increasing and being able to nutritionally support these residents within the current foodservice system poses real challenges in aged care homes.

As table 2.5 shows, malnutrition in aged care homes is not new with little evidence to suggest that there has been any real gain on how to improve this situation There is a suggestion that ageing changes the metabolic response to nutritional support, so that it may take longer to reverse weight loss and achieve weight gain in older people (Hickson, 2006). The meal environment contributes to malnutrition if there is a failure to assist residents to eat, failure to recognise malnutrition, lack of nutrition screening, absence of dietitians, leaving residents in bed all day, inadequate training of staff and poor menu planning, and lack of meal aids and poor dining environment (Cowan, et al, 2004; Wright, Connelly, Capra, Hendrikz, 2011). Malnutrition can also be an unintended outcome of dietary accreditation standards which are inappropriate for residents with low levels of activity and food consumption (Wendland, Greenwood, Weinberg & Young, 2003).

Table 2.1 outlines studies which show both individual and meal environment factors which can contribute to malnutrition. Cutting food, eating assistance and monitoring of the dining room can be directly altered by the organisation. Poor appetite and poor intake can be addressed by ensuring that the menu is providing tasty foods and meeting food preferences of residents and chewing and swallowing can be addressed by staff monitoring and ensuring that correct food textures are being offered. It may not always be possible to change the individual factors so that emphasises that the support for residents to improve their nutritional food and fluid intake must come from the meal environments system.

Table 2.1: Individual and organisational factors affecting food and fluid intake

Author (year)	N	Facility type	Poor appetite	Chewing issues	Swallowing issues	Poor intake	Cutting food	Feeding assistance required
Akner & Floistrup, 2003	54	NH	22%	NA	19%	NA	NA	48%
Beck & Ovesen, 2002	180	5 NH	NA	NA	NA	NA	NA	14%
Blaum, Fries, Fiatarone, 1995	6832	202 NH	NA	22%	NA	21%	NA	28%
Blaum, O'Neill, Clements, Fries & Fiatarone 1997	186	LTCF	7%	11%	7%	26%	NA	NA
Christensson, Unosson & Ek, 1999	261	RH	35%	21%	NA	18%	NA	41%
Keller, 1993	200	LTCF	38%	NA	19%	NA	NA	41%
Schmid, Weiss & Heseker, 2003	47	NH	51%	26%	15%	NA	45%	NA
Steel, Greenwood, Ens, Robertson, Seidman-Carlson, 1997	349	OPH	NA	NA	68%	46%	NA	49%
Sullivan, Johnson, Bopp & Roberson, 2004	900	96 NH	66%	NA	NA	NA	NA	43%
Suominen Muurinen, Routasalo, Soini, Suur-Usk, Peiponen, Finne-Soveri & Pitkala, 2005	2114	20 NH	NA	NA	20%	NA	NA	NA
Volkert, Frauenrath, Micol, Druse, Oster & Schlierf, 1992	50	OPH	14%	20%	10%	NA	16%	NA

NH nursing home, LTCF long-term care facility, OPH old people's home, RH residential home F facility Adapted from (Pauly, Stehle, & Volker, 2007).

2.3.2.5 Texture modified food and fluids in the meal environment

Texture modification refers to food being manipulated so that it can be easily consumed by a person with chewing or swallowing difficulties. The modification can be from chopped or minced to fully modified vitamised/puree texture (Johnson, Smiciklas-Wright, Soucy & Rizzo, 1995; Bale, et al 2007). Dysphagia is the difficulty in swallowing due to dysfunction in any phase of the swallowing process (Singh, 2010). It is estimated that up to 40% of people living in aged care have some form of dysphagia complications (Wright, Cotter, Hickson & Frost 2005). Neurological or dental diseases, resident's lack of willingness to chew and swallow regular foods are also primary considerations for recommending food texture modification (Massoulard, Bonnabau, Gindre-Poulvelarie, Baptistev, Preux, Villemonteix, Javerliat, Fraysse, Desport, 2011). Vitamised/puree meals are the most texturized with lump free consistency it is estimated that 15 to 30% of residents are on this type of meal (Hotaling, 1992, Wright, et al, 2005; Massoulard, et al, 2011).

The challenge with texture modified menu planning is to provide adequate nutritional intake (Germain, Dufresne, Gray-Donald, 2006). The changes to texture often results in food that loses its shape (Keller, Duizer, 2014), is less appealing and often nutritionally diluted through the addition of extra fluid (Wright, et al, 2005; Germain et al 2006). Presentation can improve intake of texture modified foods. For example, Cassens (1996), used 3D food moulds and found a 15% increase in food intake compared to foods in scoop form (Cassens, Johnson & Keelan, 1996). It is estimated that residents on texture modification only meet 45% of their energy requirements (Johnson, et al, 1995; Wright, et al 2005). The way in which vitamised/puree foods are produced, adding water, stock, gravy and sauces to blend the food together, increasing the volume but reduces the nutrient content per mouthful through nutrient dilution (Castellanos, 2004). Enrichment of texture-modified food is usually recommended, at least for energy and protein (Massoulard et al 2011), but this requires planning.

An important factor with vitamised/puree meals is that they can be considered a more convenient method to feed residents (Castellanos, 2004). If possible, menus should be planned (integrated) to incorporate foods that can be served to all meal textures (Hoteling, 1992) and including the same level of variety and choice. The menu planning practices surrounding texture modified meals is unknown in Australia with no further information being located. The importance of fluids in menu planning cannot be underestimated. Dehydration has been identified as one of the most common disorders in aged care residents (Ullrich & McCutcheon, 2008). Fluids are thickened to enable safe swallowing and form part of the texture modified process.

Thickened fluids and texture-modified foods are rarely a diet of choice, but a diet of necessity if an individual is to maintain their nutritional needs orally. People are prescribed a texture and a level of thickness for fluid intake so that a person can swallow safely. Residents with dysphagia receiving thickened liquids are likely to be at particular risk for dehydration due to less access to palatable fluids, difficulty swallowing and dependence on others for activities of daily living and feeding (Castellanos, Butler, Gluch & Burke, 2004). Some of the reasons cited for dehydration include less attention paid to residents by staff, not supporting residents to drink and staff not understanding the importance of thickened fluids (Whalen, 2000). Reason cited for residents not drinking thickened fluids are that they are unpalatable and foreign in consistency (Sharp, Ward, Cichero, Sopade & Halley, 2007).

2.3.3 Australian residential aged care

In June 2010 there were 2783 aged care homes across Australia caring for 215,000 residents of whom 70% received high-level care. Around 70% of these residents were female and 55% were aged 85 years or older (Productivity Commission Report 2011). Residential care is provided to older people when their care needs (physical, medical, psychological and social) exceed the scope of community care (Productivity Commission Report 2011). In Australia, RAC is provided by three sources; 60% not-for-profit, 34% commercial(for-profit) and 6% government operated (Productivity Commission Report 2011). The Commonwealth Government's objectives for aged care services is "to ensure that all frail older Australians have timely access to appropriate care and support services as they age" (DoHA 2009 p. xi). This is supported by the Development of the Aged Care Act 1997 outlining the charter of resident's rights and responsibilities (Aged Care Principles 2010). The federal legislation includes a set of broad principles outlining detailed funding, charging and regulatory arrangements. These principles are designed to enable aged care services to provide high level care and accommodation, access and affordability, with target funding for those with the greatest needs while providing services for individual residents with ageing in place arrangements (ACFI 2009, Aged Care Principle 2010).

The length of stay in aged care homes is becoming shorter, residents are frailer (O'Reilly, Courtney & Edwards, 2007; Munikrishnappa, 2007) with increased services for dementia care (Bruen, 2005; O'Neill, 2010, Productivity Commission Report 2011).and often RACH are viewed as a last resort when care needs become too great to be managed in a community setting (O'Neill, 2010).

Australian government funding for the provision of residential aged care is provided through the Aged Care Act 1997. Providers are paid a subsidy and the level of funding subsidy is determined by the resident's classification against the Aged Care Funding Instrument (ACFI, 2009) The

Government provided $7.1 billion in 2009-10 to aged care facilities. (ACFI, 2009). The higher level of funding is for residents with the highest care needs and there is no incentive for improvement in quality of care practices as high care residents attract the highest funding (Scherer, 2002, O'Reilly, et al 2007).

Within the funding allocation there is provision for residents requiring alternative feeding via pegs or nasogastric tubes (ACFI, 2009). The ACFI funding is not directly related to nutritional care. There is no provision for homes to obtain funding allowing the support of Accredited Practising Dietitians (APDs) to provide individualised dietetics care to residents or support to foodservices or menu development/assessment. The Dietitians Association Australia (DAA) in 2010 submitted a paper outlining changes it felt necessary to improve the nutritional screening and monitoring for residents at risk or presenting with malnutrition. DAA believe that the ACFI funding model fails to recognise the importance of nutrition care and foodservices in support of the nutritional health of residents. Areas the submission targeted included the introduction of nutritional screening for malnutrition, monitoring of weight and food intake, and the development of menu standards. The state government of Victoria has funding in place for dietitians to provide clinical interventions and systemic approaches to care and food services. The submission to the ACFI review calls for similar funding but at the national level (Dietitians Association of Australia, 2010).

Many challenges face the aged care industry to meet the demands of this vulnerable population. It is no easy task to cater for a group while meeting the needs of the individual. Understanding the important role the menu plays and how the meal environment functions is crucial to providing a home like environment and ensuring quality of care.

2.4. SECTION ONE
CONTROLLING FACTORS OF THE MEAL ENVIRONMENT SYSTEM

The controlling factors of the foodservice system come from both external and internal sources and reflect the homes' operational objectives (Lengyel, et al , 2003). The control of the system performs three very important tasks, ensuring that legal and regulatory requirements are met (Spears, 2000, Lengyel, et al, 2003), resources are used effectively and provides standards to use to evaluate the operations of the system (Gregoire, 2013). The external control is the Aged Care Standards which are the governing regulatory requirements all aged care homes must comply with to remain in operation (accreditation) and receive funding (O'Reilly, et al, 2007). The two standards pertaining to the meal environment are 2.10 Nutrition and Hydration and 4.8 Hospitality Services. These are outcome-based standards open to interpretation by individual homes, and are guided by the

expected outcomes. Another external control are the Australian Guide to Healthy Eating recommendations for the Australian well population, and do not represent the population currently residing in aged care homes (Australian Guide to Healthy Eating 2010). The last set of external controls are standards and guidelines developed at the state level and from funding grants which provide information pertaining to aged care. The internal controls come from the menu. The menu provides the blue print for all foodservice operations and is the main mechanism for the delivery of nutritional care. However, while the menu is a controlling factor, it depends on the other components of the meal environment such as inputs (human, material & operational) and transformation (production, delivery and dining room) memory (information systems) and feedback for its success in delivering nutritional care. Basic menu design is required to cater for the individual's social and nutritional needs and therein is the challenge for residential aged care homes.

2.4.1 The Australian Aged Care Standards

Aged care homes in Australia in 1962 were being subsidised by the government with no regulations in place, which lead to poor quality, unscrupulous behaviour and inconsistent practices (O'Reilly, et al 2007). In 1987, critical changes to the regulation saw the development of the Accreditation Outcome Standards. The changes instigated the standardisation of a system of assessment linked to a funding model (O'Reilly, et al 2007). This is a formal system of accreditation and ongoing home assessment by the aged care assessment agency, a body which is contracted by the federal government to carry out all aged care home assessments. "A framework that provides incentives and disincentives, mandatory participation, evaluation conducted by an external accreditation body, open and transparent accreditation standards and processes, public reporting of accreditation reports, unannounced visits to monitor continuing compliance with accreditation standards and encouragement for continuous quality improvement " (ACSAA Aged Care Standards Submission by aged care standards and accreditation agency 2010 p 3). In 1998 a further change to the system saw all funding linked to the accreditation process. For a home to be able to operate and receive funding, compliance with these accreditation standards became compulsory (O'Reilly, et al, 2007).

2.4.1.1 The Aged Care Standards and Accreditation

The Aged Care Standards consist of four main standards covering all aspects of managing an individual in aged care as shown in figure 2.1. Compliance with these four standards is measured against the 44 expected outcomes which are aligned under the four standards, as outlined in appendix one. The aged care standards form the foundation that all aged care homes are audited against. The Accreditation Standards were developed in close partnership with representatives from

consumer groups, service provider associations, unions and the Government (Productivity Commission Report 2011). Accreditation is an internationally recognised evaluation process that is used in many countries. Contemporary accreditation programs have both compliance and quality elements which promote quality and safety. (ACSAA, 2010).

Figure 2.3 The Four Aged Care Standards in Australia

Standard one : Management systems, staffing and organization development
Standard two: Health and personal care
Standard three: Resident lifestyle
Standard four: Physical environment and safe systems

For each accreditation standard there is:
A statement of Principles underlying the standard
A series of Matter Indicators; and
An expected outcomes for each Matter Indicator

The Australian regulatory framework is a national system that combines compliance and continuous improvement objectives in aged care homes in a unique way. The standards are based around an outcome focus on continuous improvement, which aims to stimulate homes to comply with acceptable standards of care and strive to continuously improve performance over time. (DoHA 2008 The Aged Care Accreditation System).

"The Accreditation Standards intend to provide a structured approach to the management of quality and represent clear statements or expected performance. They do not provide an instruction or recipe for satisfying expectations but, rather, opportunities to pursue quality in ways that best suit the characteristics of each individual residential care service and the needs of its residents. It is not expected that all residential care services should respond to a standard in the same way" (DoHA 2008 The Aged Care Accreditation System page 5)

Standards are assessed in Australia via an auditing system of announced and unannounced visits and the accreditation process which is held every three years (McDonald, 2009), with a maximum of three years accreditation. There has been some debate as to whether the auditing system is effective, and some argue that, as there is no national data benchmarking of the health status of residents, this auditing system is not consistent (Scherer, 2002). Does compliance over time really provide a measure for quality of care and quality of life for resident? Campbell 2007, reported that the ultimate outcome of accreditation is to achieve quality of care and cannot be measured through the current standard system (Campbell, 2007). The non-prescriptive nature of both the standards, expected outcomes and the accreditation process means that improvement in quality is based on the individual focus of the home and not necessarily consistent with the same home over time and between homes across the sector (Productivity Commission Report 2011). While accreditation

allows for aged care homes to develop their own individual approach to data collection and benchmarking, the ideal of optimal quality clinical care for all residents in not enforced (O'Reilly, et al 2007). Accreditation has been viewed overall as a success in the regulation of the aged care standards in Australia. Ellis 2010, reported that aged care homes in Australia have a high rate of compliance and accreditation approval with only 46 out of 9566 site inspections requiring sanction (1.6%) of facilities over 10 a year period (Ellis & Howe, 2010). There are some suggestions that the standards are soft and provide minimal requirements (Productivity Commission report 2011), can be easily distorted (Ellis & Howe, 2010) and such achievement doesn't necessarily translate into quality care outcomes (Weiner, Tilly, Howe, Doyle, Cuellar, Campbell & Ikegami 2000).

2.4.1.2 Standard 2.10 and standard 4.8

The standards that most relate to meal environment and menu planning are found in

2.10 Nutrition and hydration
4.8 Catering, cleaning, laundry service

Standard 2.10 Nutrition and Hydration has an expected outcome for all residents to receive adequate nourishment and hydration.

Standard 4.8 has an expected outcome that hospitality services are provided in a way that enhances the residents' quality of life and the staffs' working environment.

Other documentation which support these standards include:

The results and processes in relation to the expected outcomes of the Accreditation Standards for 2.10 and 4.8 (Aged Care Standards, 2010).

Assessment module 7 Nutrition, hydration, oral and dental care (The Aged Care Standards and Accreditation Agency Ltd 2010), now known as the Quality Agency)

A full outline of these documents is provided in appendix two.

Table 2.2 outlines a summary of the Standards and documents pertaining to the meal environment system, highlights some of the wording of these statements and demonstrates the open interpretational nature of this system controlling aged care. Terminologies such as expert advice, relevant guidelines, appropriate specialist are examples as to why some homes within the sector have raised concerns with the interpretation.

Table 2.2 Summary of Federal Government standards and documents pertaining to the meal environment system

Standard and documents N=5	2.10 Nutrition and hydration	4.8 Catering Cleaning and Laundry Services	Results and process guide 2.10	Results and process guide 4.8	Module seven
Number of statements	23	27	19	23	12
Examples of terminology used which is open to interpretation	Menu planning includes a variety of food and fluid textures that are appropriate to residents' needs.	Menu rotation to ensure variety in accordance with relevant guidelines Access to expert advice and reference materials, as needed	The nutritional suitable of the diet and menu is reviewed by appropriate specialist.	The standard of catering service to be delivered. Eg choice, quality and quantity	Increased monitoring of resident at risk or poor nutrition due to changes in dietary intake or illness The menu takes into account residents' preferences and is reviewed by appropriate specialists Information on the menu is provided to residents and alternative meals are available

The open flexibility of these expected outcomes has been criticised for the lack of specificity making them too open to interpretation (DoHA, 2008). The Australian Society for Geriatric Medicine 2002, stated that compliance to standards through set evaluation markers help to validate with some consistency (Scherer, 2002). Accreditation that focuses on the minimum standard such as the Australian standards, do not encourage excellence as they fail to define what is a level of best practice and the functionality required within the meal environment to ensure the system delivers quality of care at all times. Little work has been undertaken to review the meal environment system or evaluate how the standards are interpreted (Campbell 2007).

2.4.1.3 Standards – An international comparison

The standards (expected outcomes) of Australia differ in their expression from standards in other countries. Table 2.3 shows a brief outline of the Australian standards compared to that of Ontario Canada, United Kingdom, United States of America and New Zealand. Appendix three provides a full outline. The Ontario (Canadian) standards are input-based, prescriptive and detailed - whereas the Australian standards are outcome-based and structured to enable maximum flexibility to aged care providers to demonstrate compliance under the accreditation framework (DoHA, 2008). The standards from other countries are regulatory systems based on a strict system of licensing, with the availability of a license contingent on compliance with input-based standards (Campbell, 2007). The Australian system combines compliance and continuous improvement, which aims to stimulate, through appropriate standards and incentives, the capacity and motivation within the sector to comply with the standards of care and strive for continuous improvement of performance (ACSAA, 2010, O'Reilly, et al 2007) Therefore homes randomly have continuous quality improvement projects which may or may not improve the service level to residents.

Table 2.3 Comparison between the Australian Aged Care Standards with Standards from overseas.

Standard outline	Australian	Ontario	England	USA	New Zealand
Name of standard	The Australian Aged Care Standards	Long-term Care Standards	National Minimum Standards for Care Homes for Older People (the National Minimum Standards)	Code of Federal Regulations Part 483 – Requirements for states and long term care facilities 483.35 Dietary Services	New Zealand Standards Health & Disability Services (CORE) Standards
Total standards	4 standards 44 expected outcomes	37 standards 426 supporting criteria	40 Standards	3 standards 30 supporting criteria	42 standards
Standards pertaining to the meal environment system	2 expected outcomes 2.10 4.8	8 supporting outcomes	Standard 16 9 outcomes	30 supporting criteria	2 pertaining to the meal environment
Type of standards	Outcome based	Prescriptive	Prescriptive (outcome)	Prescriptive (outcome)	Outcome based
Compliance	Accreditation	Licensing	Licensing	Licensing	Certification
Funding source	Accreditation	Licensing	Licensing	Licensing	Certification
Accreditation as part of process	Yes	No	No	No	Yes

Standards from other countries provide a lot more detail in terms of what is expected from the menu planning process and meal environment. For example the Ontario standard outlines the cycle length, type of dining room arrangements, eating assistance and that a qualified dietitian must be employed to assess residents and menus (Appendix three). The purpose of standards is to provide good quality care, management and accountability (Productivity commission report 2011), however, very little is known regarding how Australian aged care homes are interpreting the expected outcomes within the meal environment.

An example of a quality assessment tool which incorporates key monitoring factors for residents food intake, eating and weight monitoring is the Minimum Data Set (MDS) This is used in over 19 countries (including mandated use in nearly all US nursing homes) and several Canadian provinces. It is the most widely used health assessment instrument for institutional long term care (Thein, Gomes, Krahn Wodchis, 2010). One of the most defined aspects of the MDS is the monitoring of food intake "leaves 25% or more of food uneaten at most meals – Eats less than seventy five percent of food (even when a substitute is offered) at least 2 out of 3 meals a day" (Training manual for the MDS Resident Assessment tool MDS-RCS p 76, 2000) triggers a full assessment of daily intake (DiMaria-Ghalili & Amella, 2005). The Australian expected outcomes have no such parameters for monitoring food intake. It does mention monitoring but due to the openness of the standards interpretation it does not indicate by what means. The real issues with standards is that some parts should be directional and defined, to ensure consistency across the sector (Scherer, 2002). Our own government recognises that quality indicators such as those derived from the MDS can serve as a reasonable first step in determining what level of quality exists in a home (Productivity Commission Report 2011). The complexity of the meal environment and the maintenance of satisfactory nutrition and hydration levels for elderly is a source of tension, especially when staff are never sure what constitutes minimum standard for compliance. The accreditation standards and expected outcomes in Australia lack specificity and direction for staff and are subject to inconsistent interpretation by accreditation assessors (Crack & Crack, 2007). The increasing frailty of the elderly population creates a further imperative to ensure quality service delivery (O'Reilly, et al, 2007) and this can only be achieved if standards provide the necessary framework for the meal environment to function as a whole system.

2.4.1.4 Exploring existing standards/guidelines available for use in Australian aged care

A standard is "a recognised document, established by consensus and approved by a recognised body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their

results, aimed at the achievement of the optimum degree of order in a given context (ETSI 2014). A guideline is a document which informs practice and provides a statement by which to determine a course of action (Chambers, 2000). Within Australia there has been some attempt made to develop standards and guidelines which will assist aged care homes to plan menus and provide better nutritional outcomes to residents.

2.4.1.4.1 Available standards

Some state Governments in Australia have been working on their own set of menu planning standards to support residential aged care homes. This attempt could suggest that there is a short-fall with the current federal standards. Other available standards/guidelines are not endorsed by the federal government standards or supporting documentation.

The standards from Victoria and Queensland are not consistent with each other. Victorian menu planning standards are based on using bands consisting of 2 to 3 bands per food item which defines nutritional profiles within each menu item in terms of energy content and nutrient density (DoHS(Vic) 2009). Queensland uses a grouping system comprising four groups each with a defined serve size and nutrient profile (QLD Std, 2011). The standards are inconsistent in their delivery of nutritional care. For example, the Victorian standard for soup band one has a portion size of 180ml, energy 360kJ, protein 5g and a maximum fat content of 9g. The Queensland group one portion size is 120 to 200ml, energy 600kJ, protein 10g with no specified fat content. This illustrates that in Australia, inconsistent approaches are currently being developed in terms of menu standards which are being aligned to aged care homes. This will also impact upon the food service industry trying to develop food products for menus to suit different specifications. A fundamental flaw in both of these standards is what reference was used to determine the nutrient content of these standards to feed residents in care. Victoria used the age range of 51-70 years male and female and Queensland used a 70 year old male. With the average age in residential aged care being 85 years old, and 55% of the population being over 85 (Productivity Commission Report 2011), neither one of these models represent the population currently in care. Furthermore the Queensland standard only uses a male and it is known that females make up 70% of the aged care population (Productivity Commission Report 2011). As already mentioned, neither of these standards are recognised by the aged care standards therefore are not adoptable by homes other than those state government owned which makes up less than 6% of aged care homes in Australia (Productivity Commission Report 2011).

The main difference between the Queensland standard and the Victorian standard is the other information which is provided for homes to follow. The Victorian standard only informs on portion

size as shown in table 2.4. Both of these standards have been designed to cover the requirements of hospital patients as well as the residential aged care homes. There is some fundamental issues with this approach; a minimum two week cycle menu would not provide the variety of foods required for RACH's. The length of stay within aged care is significantly longer then acute hospital settings (1.2 years for males and 2.2 years for females) (Productivity Commission Report, 2011) compared to 2.6 days in hospitals (Productivity Commission Report, 2011) also aged care homes provide a home like environment therefore, menu planning should reflect this and standards based on acute hospitals settings are not appropriate for planning menus in aged care.

2.4.1.4.2 Available Guidelines

In Australia there has been the development of menu planning guidelines or best practices guidelines for aged care. A comparison of the three guidelines is located in table 2.4. No modelling could be obtained on how they determined portion control, the 2012 Bartl & Bunney guidelines uses the Dietary Guidelines for Adults and it will be discussed later how inappropriate these guidelines are for the nutritional care of the elderly. There are two tools which have been designed by Bartl & Bunney (2004 and 2012) and the latest tool has some portion size. The only guideline which has significant menu planning statements is the Bartl and Bunney tool 2004.

These tools provide aged care homes with different ways to plan and assess menus. Portion sizes are different, the Queensland standard has a high emphasis on food fortification especially for residents with a poor intake. Dietitians input into the planning for menus is acknowledged in all five tools, which is not recognised in the national expected outcomes for the Aged Care Standards. Of concern are the statements in the cooking methods section by Digby and the Victorian Standard which highlight inappropriate statements which are not relevant to aged care but more appropriate for acute care. Statements such as trimming of visible fat, reduced fat cooking, removing skin from chicken, low salt, low sugar and even recipe modification are not helpful. In aged care, with the high prevalence of malnutrition as shown in table 2.5, homes need to be careful about how food preparation is carried out, so as to not contribute to this situation. The purpose of menu planning in aged care is to provide a variety of foods which the residents will enjoy eating and hence ensure they have an adequate intake (Bernstein, Tucker, Ryan, O'Neill, Clements, Nelson, Evans & Singe, 2002). The purpose of the meal environment system is to ensure that the menu is delivered for residents to enjoy. With no guidance from the main overarching standards it leaves RACH's to interpret the information, forming their own practices in menu design and planning.

Table 2.4 Breakdown and comparison of the tools developed for menu planning and assessments currently available for aged care home in Australia

Audit tool	Bartl & Bunney 2012 (Draft) Aged care specific	QLD Std 2011 Aged care and hospital	DoHS (Vic) 2009 Aged care and hospital	Digby 2006 Aged care specific	Bartl & Bunney 2004 Aged care specific
Portion sizes of food items	Yes	Yes	Yes	Yes	No
Daily food serve specification	Yes	Yes	No	Yes	Yes
Food item specification	Yes	No	No	Yes	Yes
Dietary food item specification	Calcium enriched desserts Low calcium High fibre bread	High fibre bread	No statement	No statement	High fibre bread High fibre cereal
Dining room parameters	Meal time Meal time duration Staffing at meal time Eating environment Meal service Dining ambience	No statement	No statement	No statement	Meal time Meal time duration Staffing at meal time Eating environment Meal service Dining ambience
Cycle menu/rotation	No cycle length or rotation	14 days	No cycle length	No cycle length	Menu cycle long enough to avoid monotony
Menu planning or guidelines for design of menu	No statements	Residents have input Facility accommodate cultural and religious preferences Menu reviewed biennially	No statements	Variety of foods Texture modification	Menu choice Texture modification Menu r/v Menu balance Cultural foods Written information for all foods and fluids
Texture modification specification	Texture modification guidelines	Diet and textures	No statement	Texture modification	Texture modification
Food fortification specifications	Yes	Yes	No	Yes	No

2.4.1.4.3 Addressing national menu planning standards

A report commissioned by the Dietitians Association 2012 undertook a scoping project to ascertain the development of nutrition and menu planning standards for residential aged care homes in Australia and New Zealand. Consultation was held across the sector (n=34 people) with key elements to be included in the development of any standard as listed below

1. The need for a client-centred and flexible approach to menu planning
2. Minimum core food choices to be offered per day
3. Adequate food variety over the full menu cycle
4. Nutritional standards for recipes to ensure adequate energy and protein density, while not being overly restrictive
5. Serving size portion standards
6. Advice about the dining room environments to maximise food intake
7. Requirements for meeting the needs of residents prescribed common therapeutic diets (especially diabetic, coeliac and texture modified)

Of interest is the key elements highlighting portion sizes, the use of the core food group model to inform daily food choices and most interesting is the inclusion of the dining room environment. However what is missing from these key elements is menu planning, design and choice. This project outlined the complexity of the aged care sector, the high level of diverse expectation of residents and reduced food intake. While government standards for hospitals make references to the aged care sector they were developed for an acute population (Williams, 2012). At the time of writing this thesis no further work had been undertaken by the Dietitians Association of Australia.

2.4.1.4.4 The Australian nutrition recommendations

The other part of external control for menu planning is the dietary recommendations which provide guidance on the nutritional intake of individual or a group of individuals with special needs for example, children, or during pregnancy and lactation. These guidelines include the Nutrient Reference Values (NRV's Commonwealth, 2005) and the Dietary Guidelines for Australian Adults (Anderson , 2011). The Nutrient Reference Values (NRV's) pertaining to the aged care population is designated 70+ age groups and represents people who are well. As already discussed 55% of the population in RACH's is over the aged of 85. The Australian Guide to Healthy Eating does not apply to this group and very little research into the nutrition status of the elderly has been done. To date there are no recommendations which are suitable for the residents in aged care who are frail and suffer with health complications (Williams, 2012),, suffering from numerous health issues with

reduced food intake (Truswell, 2009) and this has been acknowledged in the Guide to Healthy Eating (Anderson, 2011; Guidelines to Healthy Eating 2013).

2.4.1.4.5 International Nutrition Recommendations

Other countries such as Canada and the United States have also found difficulties in relating dietary guidelines for the aged population. In Canada, the Ministry of Health set portion sizes for long-term care from the Canadian Food Guide. These portion sizes are too large for the majority of residents to consume (Wendland, et al, 2003; Ducak & Kelly, 2009). Dietary standards were not designed to meet the nutritional needs of older institutionalised adults with low food intake (Ducak & Kelly, 2009). In the United States it was also found that these types of nutritional guidelines did not meet the requirements for this group of adults (Blumberg, 1994). The frequency and usage of epidemiological studies of the category 65+ to cover this very heterogeneous population is now inappropriate. One critical issue is whether nutritional requirements should be adjusted on the basis of observed aged associated changes in the body. Appropriate nutritional guidelines should be determined by the stage of ageing not by chronological ageing (Truswell, 2009). This means that if you're frail and malnourished then a set of dietary guidelines and/or nutritional recommendations suitable to your stage of ageing would be appropriate. Menu planning would then focus on meeting the stage of ageing and nutrition required. Considerable work is required in the area of nutritional support and how current menu planning is conducted in Australia. Once menu planning is truly understood within the meal environment then an attempt could be made to define nutritional standards/guidelines which would be suitable to support this vulnerable group.

2.4.1.4.6 Outcome of standards and guidelines

Does either input-based, outcome based standards or menu planning standards/guidelines make a difference to the nutritional outcome of residents? As mentioned above, RACH's in Australia can choose any relevant guideline published or use absolutely nothing to plan and develop their menus. Both the menu and meal environment perform a very important function in the delivery of nutritional care. By definition, standards are supposed to provide "a level of quality which is regarded as normal, adequate or acceptable" (The Macquarie Dictionary p 393) If the standards which guide menu planning provide good nutritional quality, then the continual rates of malnutrition as shown in table 2.5 observed in aged care in Australia and across the world do not support this notion. Malnutrition is preventable and treatable and in the 21st Century it remains a problem in the developed world and the nutritional needs of older people are not being met (Cowan, et al; 2004). The continual issue of malnutrition in aged care would suggest that the menu and meal

environment system require further investigation to provide insight into why this continues to be highly reported.

Table 2.5 – Prevalence of malnutrition in nursing homes reported by the literature in aged care homes

Country	Author	Year	% malnutrition	Meal Environment standards in place
Australia	Banks, Ash, Bauer & Gaskill	2007	49.2	Yes – 1988 (Braithwaite, 2006)
	Gaskill, Black, Isenring, Hassall, Sander & Bauer	2007	32-72	
	Wright, Capra & Connelly	2010	30 to 65	
USA	Municie & Carbonetto	1982	Up to 85	Yes
	Thomas, Verdery, Gardner, Kant & Lindsay	1991	23 to 85	
	Bergstrom & Braden	1992	35	
	Buckler, Kelber & Goodwin	1994	5 to 60	
	Morley & Silver	1995	17 to 65	
	Thomas, Ashmen, Morley & Evans	2000	23-85%	
	Crogan & Shultz	2000	Up to 60	
	Crogan & Evans	2001	Up to 60	
	Vellas, Lauque, Andrieu, Nourhashemi, Rolland, Baumgartner & Garry	2001	30 to 60	
	Crogan, Shultz & Massey	2001	85	
	DiMaria-Ghalili, R & Amella, E	2005	40-85	
	Labossiere & Bernard	2008	16 to 65	
	Skates & Antony	2012	23 to 85	
United kingdom	Blaum, Fries & Fiatarone	1995	7 to 50	Yes
	Booth, Leadbetter, Francis & Tolson	2005	25-65	1999 (Ines-Farquhar 2000)
Europe	Saletti, Lindgren, Johansson & Cederholm	2000	71	Yes
	Guigoz, Lauque & Vellas	2002	37	
	Rikkert & Rigaud	2003	25-65	
	Irvine, Mouzet, Marteau, Salle, Genaitay, Favreau, Berrut & Ritz	2004	5 -85	
	Suominen, Muurinen, Routassalo, Soini, Suur-Usk, Peiponen, Finne-Soveri & Pitkala	2005	29	
	Pauly, Stehle, Volkert	2007	37-62	
	Smoliner, Norman, Scheuflel, Hartig, Pirlich & Lochs	2008	30-60	
	Nijs, de Graaf, van Staveren & de Groot	2009	30 to 60	
Canada	West, Ouellet & Ouellette	2003	40 to 80	Yes
	Allard, Aghdassi, McArthur, McGeer, Simor, Abdolell, Stephens, Liu	2004	12-85	2003 (Berta, Leporte & Valdmanis 2004)
	Germain, Dufresne & Gray-Donald	2006	76	
	Dunne & Dahl	2007	85	
	Aghdassi, McArthur, Liu, McGeer, Simor & Allard	2007	45.5	
	Lengyel, Whiting & Zello	2008	5 to 85	
Asia	Chiam	2008	23-85	No

In 1859 Florence Nightingale wrote that ‘every careful observer of the sick will agree with this, that thousands of patients are annually starved in the midst of plenty’ (Perry, 1997). The rates of malnutrition have not changed over thirty years. Not all malnutrition can be related to disease and the frailty of residents. Unintentional malnutrition is when residents become malnourished due to the meal environment. Florence Nightingales’ observations from 100 years ago regarding the environment and assistance with feeding still hold weight today (Dickerson, 2001).

2.4.2 Menu planning in the meal environment

The menu plays an important internal controlling factor within the meal environment as it controls foodservice components which include the resources from purchasing, food and budget, types of production equipment, workflow and staffing (Wood & Harge, 1968, Jackson, 2003, Singh, 2010). The planning of menus is not an easy task and it is essential to understand the functional components which include the nutritional, psychological and social aspects of residents (Connor, 1999; Gregoire, 2013). Menu planning is the process by which food familiar with the population group are arranged in a pattern to be produced. Nutritional menu planning ensures that menus are planned based on resident needs and to also achieve the organisational goals of maintaining quality of care for residents (Khan, 1998). Menu planning is of importance in the aged care meal environment as it represents foods eaten in a resident’s home, therefore, requires input from residents in the planning process and is an essential communication tool.

2.4.2.1 Principles of menu design

For menu design to be successful and meet the needs of residents the following menu planning principles should be followed

<u>Menu cycle and seasonality</u>

Traditional menu planning for aged care homes commonly uses a four week cycle, non-select menu with one alternative that is given to residents to cater for dislikes (Jackson, 2003, Munikrishnappa, 2007; Singh, 2010) but can be longer (Inness-Farquhar, 2000). Cycle menus are designed for a specific period of time and then repeated in the same order after the last week (Kivela, 1994; Inness-Farquhar, 2000; Singh, 2010). Looking into a fridge to plan the menu for the day is poor kitchen management but it is known to happen (Inness-Farquhar, 2000). Therefore menus are essential for increased food production efficiency, reduction of work duplication, nutritional predictability and increased cost effectiveness. The size and type of the institution may dictate the cycle length, degree of sophistication within the menu pattern; however, most homes function best

with an approved, regularly repeating menu sequence (Matthews, 1985). A study from New Zealand showed that 90% of aged care homes used a 4 week cycle menu (Chisholm, Jensen & Field, 2011). It is important to provide adequate cycle length in menu planning. A study by Carrier (2009), found that the risk of malnutrition decreased with longer menu cycles because of the greater variety of foods on offer and the reduced boredom and predictability of the menu (Matthews, 1985; Carrier, West, Ouellet, 2009). The use of cycle menus do have some disadvantages and if not planned well can become boring, repetitive and predictable if the cycle is too short or if it presents the same food on the same day each week (Wood & Harge, 1968, Matthews, 1985).

Menu planning should involve the changing of menus within a year to reflect seasonal availability in the food supply (Wood & Harge, 1968; Kivela, 1994; McCaffree, 2009). Menu planning does not have to be rigid. There should be flexibility to include festive menus for holidays and other social occasions (Singh, 2010), thus allowing the menu to provide something for residents to look forward to. The current standards allow for open interpretation of menu planning in terms of cycle length and seasonal changes and very little is known in Australia regarding how RACH undertake this design principle.

Menu planning balance

Menus should be planned around a set of balance principles. These include colour, texture, consistency, flavour, cooking methods, serving temperature and presentation (Khan, 1998). Foods with a variety of colours so that plate presentation stimulates the appetite, avoids meals all looking the same, food textures and consistency which allow for different mouth feel which will enhance the eating experience and adds appeal to the menu. Flavour is important for residents to enjoy the foods they eat. Cooking methods so that meals are not cooked the same way e.g. roasts, stir fries, stews and steamed. Serving temperature is essential to ensure that food stimulates taste and meets resident's expectation in terms of hot and cold foods and presentation is paramount to ensure dignity in dining and that meal experience is enjoyed (Wood & Harge, 1968; Khan, 1998, Singh, 2010).

The Best Practice Food and Nutrition Manual for Aged Care Facilities guideline provides some information, stating that "Meal appeal is considered in relation to colour, texture, flavour and shape of food" (Bartl & Bunny 2004 p 46 – tool five). People eat with their eyes so it is important that the menu translates into attractive appealing meals (Jackson, 2003). The expected outcomes do allude to homes using relevant guidelines. The question is what guidelines to use and how the aged care sector translates menu design principles into practice is unknown. These design elements are important to ensure that the menu has variety and does not become boring (Khan, 1998).

Understanding what residents like to eat and designing a menu to meet those expectations are central to any aged care foodservice operation in providing quality of meal services to residents in care (Wood & Harge 1968).

Menu patterns

Menu pattern is the outline of food items to be included at each meal (Gregoire, 2013) and sets the tone for how the menu will be designed and what choices are available (Wood & Harge, 1968).

A menu pattern is an outline of the menu items categories such as breakfast, desserts and dinner items. The number of choices and menu options vary according to the goals of the foodservice operations (Gregoire, 2013). Menu patterns are familiar, distinctive with family life and bring comfort and security to an individual (Evans et al, 2005). Menu patterns can be set by religious customs e.g. fish on Friday and traditional patterns like serving the roast meal on Sunday. Food expresses feeling, celebration, and promotes a sense of companionship and the menu pattern provides a framework for which that occurs (Evens, et al, 2005). A study in New Zealand showed that out of a sample size of 50 homes, their main meal was scheduled at midday (Chisholm, et al, 2011). There is very little known regarding the menu patterns and choice options in residential aged care homes in Australia.

2.4.2.2 Menu written information and communication tool

Menus are essentially a communication tool and list the foods items to be served to residents, instruct the production system on the foods to be produced (Kinton, Ceserani & Foskett, 1996, Khan, 1998) and meet organisational objectives in terms of budget (Mifli, 2000). The only information eluding to the written information on the menu was found in the Bartl et al, 2004 guidelines "written menu information has detail of all food and beverages offered at both main meals and mid meals the types of soups, actual vegetable and range of vegetables " (Bartl & Bunney, 204 p 46) The Australian expected outcomes provide no information regarding the level of menu planning information required to be on a menu or provided to the residents.

Equally important is when a written menu is not followed by the production system and the menu is changed and how these changes are communicated to residents. Again the expected outcomes make no reference as to how residents are to be informed about menu changes. These aspects can cause poor menu planning, variety and mis-communication within the meal environment. Little could be found regarding these aspects of menu planning or the quality of written menus information.

2.4.2.3 Repetition of food items

When planning menus which are cyclic it is important to avoid repetition (Kivela, 1994; Inness-Farquhar, 2000). Repetition is when menu items are repeated and therefore, reduce the amount of food items available for residents to eat (Kinton et al, 1996). Repetition can occur in three ways. Within the same week, that is foods are repeated more than once for example pumpkin soup Monday and Wednesday. On the same day on consecutive week's pumpkin soup on Monday for three weeks in a row (Thompson & Mayerson, 2005) and between weeks in which pumpkin soup may be on Monday night in one week and Tuesday night the second week. A narrow range of food choices may lead to dietary inadequacies (Bernstein et al, 2002) A study by Ducak highlighted the Ministry of Health Ontario meal rotation standards that there cannot be a meal repetition for five days (Ducak & Keller 2011). The standards and guidelines which have already been discussed do not have any provision within them to measure repetition. The New Zealand Dietetics Association menu auditing tool for aged care homes indicates that food should not be repeated daily and minimal repetition for lunch meals and desserts over the menu cycle (New Zealand, Menu Audit Tool for Aged Care Facilities, 2008). Menu repetition may become monotonous if the cycle is too short and foods are repeated on the same day of each week (Wood and Harge, 1966). This design feature is unknown within the menu planning for aged care menus in Australia.

2.4.2.4 Food choice

Understanding food choice is very important in the process of menu planning. Food choices vary with individuals and are unconscious and conscious decisions made by an elderly person during the point of food consumption. Food choices are affected by personal factors, the expectation of food, appetite, mood, emotions, by socio-economic factors - the meaning and status of food and income (Drewnowski, 1997), and educational factors - knowledge about nutrition and food, and intrinsic factors such as appearance, odour, texture, colour, flavour, quantity, quality preparation and presentation of foods (Herne, 1995). Residents need to exercise some food choice so that they can have some control over their food environment. Due to the nature of aged care, when a resident moves in they find the menu already set and organised and then have to adjust to being told when to eat, what meals are served and who they will be sharing a meal with in the dining room (Hoffmann, 2008).

In aged care menu planning, menus are often cyclic with limited choices (Singh, 2010). Being able to increase independence in food choice and active participation in food provision has been linked with lower nutritional risk (Winterburn, 2009). The amount of menu choice is unknown in Australian Aged Care menu planning. The expected outcomes from 4.8 and 2.10 do not provide any

guidance, leaving this open to individual homes interpretation. What is more interesting is that standard 3.9 which centres on resident choice does not mention choice of foods. Unlike the Ontario Standard 71 Menu planning (c) "*alternative choices of entrees, vegetables and desserts at lunch and dinner*" are required (Nutrition Care and Hydration Program 2010). Food is an important aspect of residents' lives and (Ball et al, 2000) found that is this area the autonomy was limited with 58% of residents reported having no choice about menus and 97% no choice for meal times (Ball et al, 2000). Also the meal environment needs to support food choice in terms of time with meal delivery systems that enable residents to choose at point of service, not days before when the resident does not remember what they have selected from the menu (Nijs, de Graaf, van Staveren & de Groot, 2009). Meal delivery systems which are tray-based further reduce the flexibility of meal service to offer choice with meal sizes and are inflexible in providing seconds. Very little is known regarding choice options facilitated by menu planning in RACH for both the general and texture modified meals.

2.4.2.5 Nutritional menu planning

Nutritional menu planning is the most important aspect of the design of menus and takes into consideration all the aspects discussed so far. The most nutritionally sound menu is worthless if the foods and fluids presented at meal items are not consumed (McCaffree, 2009). Variety of foods plays a very important part in the development of menus as with increased variety of foods comes more opportunities for residents to access the foods and fluids they like to eat. A narrow variety may lead to dietary inadequacy, a concern for the elderly population (Bernstein, et al, 2002) who can have a reduced food and fluid intake by way of a small intake (Beck & Hansen, 2010; Ducak & Kelly, 2011). The relationship between food variety and nutrition cannot be underestimated (Beck & Hansen, 2010).

Menu planning needs to meet the increasing needs of residents with multiple diseases or conditions, texture modification, functional decline leading to inability to remain independent in self-care and increased reliability on care staff for nutritional intake (Bernstein, et al, 2002). The use of restrictive diets impacts upon nutritional intake and quality of life. The use of therapeutic diets reduces the palatability of food or by restricting caloric intake may play a role in the poor nutritional status of residents (Bale et al, 2007, Buckler et al, 1994; Speroff, Davis, Dehr, & Larkins, 2005). Such restrictions in aged care need to be balanced against the very real possibility of continued inadequate food intake because of decreased palatability of food (Buckler, et al, 1994) making menus unappealing (Speroff, et al, 2005) leading to malnutrition (Bale, et al, 2007).

As the body ages the energy requirements reduce due to the decrease in metabolism (DiMaria-Ghalili & Amella, 2005). Energy requirements for healthy people with no chronic diseases naturally decline by 30% between the age of 20 and 80 (Parker & Chapman, 2004). However, apart from energy all other nutrients are much the same as for a younger person, unless there is a chronic illness or malnutrition. The difficulty associated with ageing is that older people tend to eat less food with decreased portion sizes due to a decreased appetite (Bale, et al 2007; Nowson, 2009). Inadequate food intake in the nursing home usually occurs in the setting of adequate quantities of food (Lammes, Torner & Akner, 2009) and menu studies have shown that even when the menu offers adequate nutrition (Suominen, Laine, Routassolo, Pitkala & Rasanen, 2004, Leslie, Lean, Woodward, Wallace & Hankey, 2006) , it is the meal environment which has the greatest impact upon food consumption eg residents eating all their meals in bed or poor eating assistance (Leslie, et al, 2006; Lammes, et, al, 2009).

Food must be prepared and served in an attractive eating environment. Sensory perception such as taste, smell, cognition, attention, manual dexterity and the ability to chew and swallow are part of the process (Abbasi & Rudman, 1994). This means that the menu and food intake of older people should focus on providing nourishment and nutrient density (Gustafsson & Sidenvall, 2002). The assurance that menus are planned for adequate intake for frail nursing home residents is essential for promoting health, maintaining functional independence and preventing malnutrition (Bernstein et al, 2002).

Reduced food choice from the menu and the consumption of a nutritionally inadequate diet is likely to be the result of a combination of medical, social, environmental and functional factors that influence food and fluid intake. These and other age-related complications that could potentially interfere with food intake, emphasise the need for menus to be designed with diverse food choices for maximum variety (Bernstein et al, 2002) to ensure quality care for all residents.

One of the main problems with the elderly is decline of food intake and loss of motivation to eat (Donini, et al, 2003). When the food choice, preferences and meal patterns of residents is ignored this could lead to malnutrition and nutrition-related problems and thus diminish the overall wellbeing of residents. Menu planning guidelines for nursing homes should be designed to specifically address the high nutrient needs and the chronically low food intakes of this group including those on texture modified diets (Adolphe, Whiting & Dahl, 2009). Menu planning offering the appropriate level of nutrients results in the provision of large volumes of food and energy levels that are simply not feasible for this population who often require small meals, resulting in significant food waste. Providing foods that are fortified yet indistinguishable from their

unfortified counterparts would ensure an acceptable nutrition alternative and make incorporating fortified foods onto the menu easier (Dunne, 2009).

Maintaining nutritional status among the elderly residents is the result of the team work in the home. It is the responsibility of the food service staff that the menu contains foods which are liked, have enough energy and nutrients and are attractive to the residents. Care staff are responsible for assisting the residents at mealtimes. All staff are responsible to ensure that the meal environment system identifies individual resident's needs and to respond to them in a way that enhances their quality of life (Suominen et al, 2004). Currently in Australia there is very little known regarding how the menu operates in the meal environment system including the rate of menu repetition.

2.4.3 Conclusion to the control systems

The role of standards/guidelines needs some consideration. Their purpose is to ensure compliance, safety and that homes are operating with a certain level of care (Campbell Report, 2005). Standards have been criticised for their inability to be able to deliver personalised care. In aged care, the emphasis should be on input rather than outcome as the basis of quality (Marquis, 2002). Aged care is viewed as an industry "high process-low product" with people at risk of becoming raw material who are a task of the production process of care. Standards are viewed as mechanistic and due to their need for documentary evidence, resources are diverted from the resident to enable compliance in documentation (Marquis, 2002). Care is not a commodity that can be boxed as one size fits all - it is individually based. As table 2.5 shows above, the rates of malnutrition firstly, have not reduced with the introduction of standards and secondly it does not support that the current standard framework used in Australia sufficiently provides for the nutritional needs of residents. Little evidence could be found that compared the impact of outcome-based versus input-based menu standards. The lack of input in standards and guidelines for menus in Australia could be contributing to the known problems of nutrition risk among residents in RACH's (Williams, 2012).

For the meal environment to function as a system requires all of the components to come together as shown in figure 2.2. So should the meal environment system as a whole be measured as an outcome of the entire system rather than an individual component as it is currently? The controlling factors to the meal environment system are complex. RACH's are left to interpret the standards which could lead to inconsistent menu planning and design. It has been identified that in Australia very little is known regarding how menus are designed in RACH's.

2.5 SECTION TWO
MEAL ENVIRONMENT SYSTEM INPUTS

Inputs are the items needed to accomplish the objectives of the system (Lengyel, et al, 2003; Gregoire, 2103). System inputs can be divided into three areas, human, material, and operational (Gregoire, 2013). Human inputs refer to the skills and knowledge of the staff and the labour that is available to assist in the meal environment. In aged care the three prime areas of labour are care and foodservice staff for meal delivery and eating assistance, dietitians interfacing with foodservices to ensure that the menus meet the nutritional needs of the residents and the functioning of the meal environment. Material inputs include the foods which make up the menu, nutritional support and menu design aspects such as food portion sizes and recipes. Operational inputs include time allocated to assist residents to eat and supervision of the meal environment.

2.5.1 Human resources

2.5.1.1 Care staff

Care staff make up the largest group of employees in aged care and undertake a twelve week course to work in an RACH's. There is no expected outcome relating to minimal qualifications which are required for staff working in aged care. From the literature one of the main concerns within the meal environment is the prevention of malnutrition. The current twelve week course does not cover any nutritional information sufficient to give staff the skills to understand the complexity of supporting residents nutritionally. Studies have suggested that care staff lack sufficient knowledge regarding the nutritional needs of older people (Crogan, Shultz, & Massey, 2001; Gaskill, et al, 2009). Due to the interpretational nature of the expected outcomes it is difficult for staff to know the boundaries of nutritional care and as there are no set bench marks for measuring the quality of care this contributes to a system which, though having a high level of control through the standards, is totally reliant upon the skills of staff .

The attitude of staff is significant and can add to or detract from a resident's mealtime experience. Mealtime should be viewed by staff as an opportunity to create a home-like atmosphere by their interaction with the residents. In reality, the most difficult problem that staff face is trying to ensure adequate food and hydration for their residents. Staff often view mealtimes as an added chore in their daily routine, and the process is rushed to enable them to move on to more preferred activities. These feelings will be passed on to the residents, thereby having a negative impact on the meal environment (Hoteling 1990).

2.5.1.2 Foodservice staff in the meal environment

The Aged Care Standards do not specify any minimum formal qualification which is required for staff to undertake management or employment in foodservices. No legal registration is required for catering staff to be qualified apart from food safety working in aged care (Innes-Farquhar, 2000). The qualifications to manage foodservices in Australia are non-existent as there is no mandatory stipulation by the expected outcomes under 4.8. Compared to the Ontario supporting criteria 74 (2) either a registered dietitian or a qualified nutrition manager must be employed to manager foodservices. And the nutrition manager must have a 2 year diploma qualification and be a member of the Canadian Dietetics Association (Nutrition Care and Hydration Program, 2010).

2.5.1.3 Dietitians in the meal environment

Dietitians have the skills and knowledge to provide care to residents in both clinical and foodservices. However, aged care is sometimes not seen as a priority for the profession (Grey Donald 1995). The expected outcomes in Australian Aged Care Standards make no provision to ensure that dietitians are acknowledged as the nutrition expert. Nor do the expected outcomes indicate any amount of time dietetic involvement should be occurring in aged care (DoHA, 2009). Compared to the Ontario supporting criteria 74 (2), registered dietitians must be a member of staff of the home and is on site at the home for a minimum of 30 minutes per resident per month (Nutrition Care and Hydration Program 2010).

In aged care homes food is considered a routine job that can be carried out by anyone. Homes need to recognise dietetics as a professional field, rather than something which is passed around and parts assigned to whomever or replaced by the use of nutritional supplements. There is a great need to recognise that there is an art and science to running foodservices and requires specific training in menu planning, food purchasing and service delivery (Obert & Burr, 1964). There is very little known about how staffing interfaces with foodservices and who actually runs foodservices which forms a vital part of the meal environment system.

2.5.2 Material input food

2.5.2.1 Food and portion sizes

Food is an integral part of our wellbeing and quality of life. It extends beyond simply satisfying hunger and providing nourishment. Food has a profound psychological role to play in society and is invariably chosen for non-nutritional needs (Doyle, 1989; Hartwell, 2009). During the course of life everyone develops his or her own very individual biography of eating (Hoffman, 2008). The current generation of elderly lived through world wars, the great depression with food rationing and limited

technology for preserving foods (Farrer, 2005). The traditional menu pattern in the early twentieth century consisted of three main meals a day with snacks throughout the day. Breakfast was a substantial meal consisting of porridge with hot milk and sugar. This was followed by a hot breakfast of bacon and egg with white toast, marmalade. People would often take a cut lunch to work or purchase a pie at the bakery (Wahlqvist, 1988) Dinner was the main meal of the day. It was normally made up of a soup, a meal of meat with gravy, potato, yellow and green vegetables with a desert such as steamed pudding or egg custard. On the weekend the main meal usually was at lunch time with the Sunday meal consisting of a roast (Wahlqvist, 1988). Up to the 1970's takeaway foods were confined to fish and chips and Chinese (Farrer, 2005).

Understanding food preferences is essential for determining the types of foods which are used to create a menu. Many studies on preferences indicate that elderly subjects would prefer higher concentrations of food which were sweet, salty and acidic (Mathey, Siebelink, De Graaf & Staveren, 2001) indicating that tasty foods were more acceptable and should be included on a menu. Brogdon et al (1973) undertook personal interviews with aged care residents concerning food preferences and found that the most favoured foods among residents were sweets, with 91% indicating these as favourites (Brogdon & Alford, 1973). Holt undertook two studies over a ten year period between 1975 and 1985 and found that potatoes, chicken, beef and pies were the most popular foods preferred (Holt, Nordstrom & Kohrs, 1988).

The food supply within aged care is constantly changing and will continue to do so, although very little recent information could be found regarding food preferences. Aged care menu planning is a dynamic situation impacted upon by the individual resident's preferences, the cultural preference of other cuisines. The need to maintain tasty food for each individual while working from a menu planned for the entire home poses many menu planning challenges. Residents presented with unfamiliar foods and disparate cultural preference can affect food intake and nutrition status (Ducak & Keller, 2011).

Foods in menu planning should also be integrated across diets and texture modification. The meal experience can be divided into three parts. Before consumption, there are expectations based on knowledge and food memory. During consumption there are sensory factors which include variation of texture, temperature, individual senses of taste and smell, cultural family background, likes/dislikes, the amount of food and internal and external environment. Finally after finishing the meal, the mood is affected by the meal consumed, the amount and type of food and by factors such as positive or negative meal environment (Rapp, 2088). Therefore menu integration which offers residents quality meals is essential. When planning menus, regardless of diet or texture, the

goal is to use the same foods and therefore allowing residents to have similar meals. This is an important quality aspect of aged care menu planning and little is known regarding this in RACH's.

Portion sizes play a critical role in food in menu planning not only to control cost but to ensure that residents are happy with the meal size (Gregoire, 2013). Portion sizes work well with standard recipes which are an essential for the development and execution of any menu (Gregoire, 2013). Meal size can greatly affect food intake, too large a meal can be off-putting and large meals may hide the true amount of food consumed (Puckett, 2013).

2.5.2.2 Food nutrition supports

If the residents fail to consume enough food from the menu, other tailored nutritional strategies such as supplementation and food fortification may be needed to support food intake (Rikkert & Rigaud, 2003; Lengyel, et al, 2003). Foods served to residents should be prepared by methods that conserve nutrient value, flavour and appearance (Munikrishnappa, 2007). In some instances, nutrient and energy density strategies are required. Nutrition density is defined as a measure of nutrients in food compared with the kilojoules it contains and energy density as a measure of the amount of energy in food compared with the volume of food (Khan, 1998). Both of these are valuable strategies in menu planning. The elderly are widely considered to be at higher risk for nutritional problems (Berner, Stern, Polyak & Dror, 2002; Beck, Damkjaer & Beyer, 2008). It is well recognised that inadequate dietary intake is often observed in nursing homes due to reduced taste and smell (Berner et al, 2002), feeding difficulties (Weekes, 2008) and cognitive impairment (Buckler, et al, 1994). There are three ways to support the menu and food intake for residents by using commercially produced supplements, additional foods preferred by the resident and fortifying the menu.

Commercial supplements are premade and come in three types, liquid, pudding and powders. Often to combat weight loss, oral supplements are one of the primary interventions in aged care (Kayser-Jones, 2006). Supplements are often used to support residents who are malnourished and have been shown to improve clinical outcomes in older people (Gaskill et al, 2008). However, compliance can be poor because of flavour fatigue (Gall, Grimble, Reeve & Thomas, 1998; Fabian 2001; Gosney, 2003), unfamiliar drinks, drinking from a straw and decreased dexterity to handle the packaging that supplements come in (Gosney, 2003). Liquid supplements may blunt the residents' appetite for meals and reduce the pleasure of eating (Kayser-Jones, 1997) but other evidence suggests that in mildly malnourished residents, a 250 kilocalorie drink did not affect oral intake of meal consumption (Irvine, Mouzet, Marteau, Salle, Genaitay, Favreau, Berrut & Ritz, 2004). Nutritional supplements are often used in an unsystematic way, with little training to aid understanding of their role and use in the nutritional care of residents. Poorly monitored and lack of appropriate recording

of supplement usage may give the false impression that residents' nutrition status is being addressed, when in fact the supplement is not consumed (Gaskill et al, 2008).

Food fortification is the process of addition of nutrients to foods in the course of preparation to increase energy and nutrient density without changing the volume of the food (Kral & Rolls, 2004; Dunne, 2009). Food fortification can occur by either using pre-made powders or basic food ingredients. Carbohydrate and protein powders are available that can be added to the residents' foods to increase the nutrient density without changing the flavour, texture or colour (Chernoff, 1994). Basic ingredients include added cream, milk powder, margarine, butter or the addition of sugar to increase the energy density (Castellanos, Marra, Ventura & Johnson, 2009). The United States, Denmark and other countries have documented the prevalence of underweight residents (BMI <18.5) who eat institutionally prepared meals at 15-30%, increasing the need for menu planning that includes energy and protein food density strategies (Beck & Hansen, 2010).

Food fortification can be used when the resident only eats small amounts of food and to achieve adequate nutrition a combination of smaller portions with increased energy and nutrient density is required (Barton, Beigg, MacDonald & Allison, 2000) . Barton 2000, found that 42% of elderly residents indicated that portion sizes were too large. Reducing portion sizes to suit residents eating perceptions could be an appropriate strategy so long as the reduced portion was adequately nutritionally fortified (Barton, et al, 2000). A strategy to decrease portion size and increase nutrient density with added fat and carbohydrate can raise energy intake up to 95%. Studies have shown in other countries that increasing the nutrient density of food or the provision of between-meal snacks can raise energy intake to the required levels, however may not be the complete nutritional strategy as protein levels in these studies were still low (Allison, 2002). Lorefalt et al 2005 found in studies where hospitals enriched food with various fats to create an energy-dense diet, that there was a significantly higher intake of energy, protein, dietary fibre and several micronutrients (Lorefalt, Wissing & Unosson, 2005).

2.5.2.3 Meal delivery food strategies

Residents may experience difficulties in consuming adequate levels of nutrients from meals and this is why mid-meal snacks play an important role in the design of menus and increasing food variety (Lengyel, et al, 2003). One optimal method for menu nutritional support is to feed residents extra foods or to offer seconds at the meal time. The menu plays an important role in the delivery of nutritional care and encouraging residents to eat their meals and monitoring that they do is crucial within the meal environment. If intake is poor, a cost effective strategy and one which can be done at meal times is to offer other additional foods which the resident likes to eat eg dessert foods

throughout the day (Chernoff, 1994). For residents who have unpredictable appetite levels, snacks including crackers, cheese, hard-boiled eggs, peanut butter, fresh or dried fruit, small meals, such a half a sandwich and a glass of milk or juice, soup or milk shakes can be offered (Chernoff, 1994). For extra foods or seconds to be offered in the meal environment, the meal delivery system needs to be responsive and have capacity to do so. Meal delivery systems such as tray meal services have a reduced capacity to provide menu support within the meal environment as they cannot change portion size, choice of foods or offer seconds as compared to a buffet dining style which provides open choice (Hoffman, 2008).

2.5.3 Operational

2.5.3.1 Labour

The types of labour in aged care include registered nurses, enrolled nurses, care staff, lifestyle and foodservice/hotel and administration staff. There are no mandatory hours from the federal government to set staff to resident ratios. Aged care homes determine their own level of care hours to resident's care needs. A study carried out by Simmons determined the average staff to resident's ratio of 5.3 was quite sufficient to ensure quality of care (Carrier, et al 2009).

2.5.3.2 Eating assistance

Feeding has been defined as the ability to move food from a receptacle such as a plate to the mouth (Watson & Green, 2006). The ability to self-feed is often reduced by the reduction of grip strength, involuntary hand movement or the loss of the use of the individual dominant hand (Bale, et al, 2007). As residents become frailer, the need to provide eating assistance increases as table 2.1 shows with estimates of eating assistance required in aged care homes ranging from 14% to 49% (Steel, et al, 1997; Beck & Ovesen, 2002). Eating assistance can be provided as verbal prompting, cutting up meals or full assistance where a resident totally relies upon someone else to feed them (Simmons, Lam, Rao & Schnelle, 2003). Studies have shown that eating assistance can take between 20 to 40 minutes (Kayser-Jones, 1997; Simmons et al, 2003). Feeding residents will always be time consuming and labour intensive (Thomas, Verdery, Gardner, Kant & Lindsay, 1991) and very much part of the meal environment system.

One of the fundamental challenges for aged care as already mentioned is the staffing required to fully care for residents. Inadequate staff numbers to assist residents to eat has repeatedly emerged as the major barrier to adequate food intake (Schell & Kayser-Jones, 1999; Crogan & Evans, 2001). There is a strong relationship between unintentional weight loss in dementia residents in bringing food to their mouths and the ability to feed one-self (Hickson, 2006). Therefore it is essential that

staff are around at meal times to assist with feeding residents. Limited amount of time staff have to assist has been found to negatively impact on resident's food intake (Crogan & Evans, 2001). Kayser-Jones (1997), found that often in dining rooms there was not enough staff to feed residents, especially at evening service and weekends (Kayser-Jones, 1997). Providing a high quality of care to nursing home residents is ensuring they receive an adequate amount of nutritious food and fluids that meets their individual needs, and residents are provided with the level of assistance necessary to eat their food in a safe and dignified manner (Kayser-Jones, 1997).

The feeding of a meal in aged care has been aligned to a task with meal time interaction often omitted which is an important element and maintains a social interaction with residents (Kayser-Jones, 1997). Residents cannot be rushed through meal times. The lack of staff and the pressure to get meals over with and return to the kitchen within a tight time of forty five minutes to one hour, places pressure on staff to feed residents quickly (Kayser-Jones & Schell, 1997). If a resident is slow then a real risk develops that not enough food will be consumed (Simmons, Babineau, Garcia & Schnelle, 2002). Simmons et al studied the quality aspects of feeding eating assistance and found that residents with low oral food and fluid intake receive little or no assistance from nursing home staff during mealtimes. Residents who did receive assistance from staff during meals often receive poor quality assistance eg placing large amounts of food in a residents' mouth, attempting to feed residents too quickly including those with swallowing difficulties (Simmons et al, 2002). An unfortunate consequence of inadequate staffing is that mealtimes, rather than being an enjoyable, pleasant event can become an unpleasant ordeal for residents and an arduous task for the staff. (Kayser-Jones, 1997). Food can be one of the residents few remaining pleasures and every meal should be a special occasion. One of the most important and challenging nursing care activities has been delegated to the least educated and lowest paid worker in the nursing home (Kayser-Jones, 1997). Assisting residents who have difficulty feeding themselves should become a designated duty as this may be crucial in optimising their nutritional status. A family style approach to mealtimes has been shown to improve body weight, quality of life and well-being (Leslie, 2006).

2.5.4 Conclusion to system inputs

The inputs to the system provide the raw material which will allow the system to produce the meals and provide the support residents need. Understanding the food supply and being realistic regarding the physical support residents need in eating assistance is crucial. The food supply is not just about the raw food material it is also about the strategies used in menu planning to support residents with a reduced food intake. Currently in Australia little is known regarding who is running foodservices

or what level of intervention dietitians have with foodservices, what is the level of staffing or how staff work in the meal environment.

Menu planning guidelines for nursing homes should be designed to specifically address the high nutrient needs and the chronically low food intake of this group including those on a texture modified diet (Adolphe, et, al, 2009). Thus it may be necessary to systematically enhance or fortify key foods that are readily accepted by the elderly. Many commercial food supplements are prescribed in order to improve the clinical status of a resident. However, compliance in consuming the supplement is often questionable. Residents may be less affected by flavour fatigue with ordinary food that has been fortified, than with sip feeds (Fabian, 2001). Menu planning offering the appropriate level of nutrient, results in the provision of large volumes of food and energy levels that are simply not feasible for this population who often require small meals. This results in significant food waste. Providing foods that are fortified yet indistinguishable from their unfortified counterparts would ensure an acceptable nutrition alternative and make incorporating fortified foods onto the menu easier (Dunne, 2009).

2.6 SECTION THREE
TRANSFORMATION IN THE MEAL ENVIRONMENT

Transformations are the drivers of all operations and turns the inputs into outputs (Lengyel, et al, 2003; Gregoire, 2013). It is the doing part of the system and is comprised of three areas, production of meals for residents, meal delivery system and the dining room, the space in which residents consume the meal and this could include the residents room.

2.6.1 Production system

The production system is the transformation of food into meal items. Predominantly there are three main systems, fresh-cook, cook-chill and cook-freeze (Spears, 2000; Gregoire, 2013). Fresh-cook is cooked and served on the day and that means the homes have kitchens operating seven days a week. There is some variation on the cook-fresh theme where homes do use some cook-chill technology so that they can re-thermalise over the weekend and reduce their labour costs. They can also produce batches of product like porridge, soups and gravies only a few times a week and hence free up time to concentrate on other areas of catering (Singh, 2010).

Cook-chill is the process whereby food is produced and rapidly chilled thus enabling it to have an increased shelf life anywhere between five and twenty eight days. One of the advantages of cook-chill is that it reduces the time that a kitchen needs to operate (no weekend kitchen operations) thus reducing the costs associated with catering. Cook-frozen uses similar technology to cook-chill

except the food is rapidly frozen (Singh, 2010). A study by Williams 1996, determined that there was very little difference between the food production systems in terms of nutritional losses (Williams, 1996).All production systems in Australia must conform to the Vulnerable Food Safety Legislation (NSW Food Authority, 2011).

For the production system to be successful it must translate the written menu into visually stimulating meals which meet the needs of all residents over the entire menu pattern. The production system relies upon the menu and information systems to ensure that resident' meals requirements are correct (Gregoire, 2013). It is not an easy task to meet all the likes, dislikes and nutritional needs of residents daily. Visually pleasing meals is an essential part of the meal environment as residents eat with their eyes. While texture modification affects the visual appeal, every effort should be made to communicate and present these foods well. The information system of the meal environment must be kept up to date, be flexible and enable changes to resident's preferences as quickly as possible. The menu is only as good as the information which is provided to support its production. The same can be said for presentation. If the meal is well presented, it will increase the appetite and hopefully be eaten.

2.6.2 Meal delivery system

The main purpose of a meal delivery system is to deliver the meal to the resident. Two primary meal delivery systems are used. Bulk delivery is where meals are heated in a central area and served either from a kitchen or satellite kitchen into a dining room. The second is the meal delivery system that uses pre-plating for tray assembly which uses a cart to reheat food within a kitchen, satellite kitchens or a thermal support system which will take tray meals to the resident's area (Gregoire, 2013). Evans, 2005, has suggested that best practice in aged care should include food carts or buffet dining programs which allow item selection and portion size controls to be used to enable choice by residents (Evans et al, 2005). Very little is known regarding how different meal delivery systems in aged care, affect nutrition uptake. Considering the high rate of malnutrition in aged care the delivery of the meal should be a primary consideration when planning the meal environment.

Bulk meal delivery systems have been shown to increase the amount of food eaten due to the plate presentation and greater degree of flexibility on portion size (Wilson, Evans & Frost, 2000; Evans, et al 2005). Residents can interact with the menu more with this form of family dining service which has been shown to produce smaller amounts of plate waste as residents are able to choose the amount of food they want to eat (Hackes, Shanklin, Kim & Sue, 1997). Kelly 1999 also showed that when measuring plate waste, the bulk system resulted in less plate waste then the plated system

(Kelly, 1999) and quality of life seemed to improve following the introduction of buffet-style meal service (Remsburg, Luking, Baran, Radu, Pineda, Bennett, Tayback, 2001).

Tray meals services where meals are individually served on trays and delivered to dining areas or residents' rooms do not stimulate a social environment. Using trays and heating tray carts reduces this effect and often the smell of food is lost. Such meals provide task orientated care rather than resident orientated care (Nijs, de Graaf, Kok & van Staveren, 2006) as the tray is prepared with no input from staff. The tray system also reduces the flexibility for the resident to change their mind about the food choice, adjust portion size and allow for seconds to be offered. Another important point with tray meal delivery systems is to ensure that they keep the food warm and have the ability to hot hold if required. This is especially important when residents require assistance to feed and meals are left on the tray waiting for care staff to provide assistance. Table 2.6 outlines studies undertaken on food waste created by meal delivery systems. Any system can have high food waste if the meal environment system is not supporting residents during meal times.

Table 2.6 Meal delivery system and food waste for aged care homes

Author	Bed No	Delivery system	Methods	Findings
Hackes, Shanklin Kim Tachee Su 1997	200 CCRC	Tray Wait-staff service Family-style dining	Service food wastage over 7 days	Tray service generated more service food waste for all three meals. Family style service generated less waste.
Kelly, 1999	ERH	Conventional system – plated meals Bulk system	Plate wastage	Food waste by each system Bulks system 50.5% Plated system 61.6%
Shatenstein & Ferland, 2000)	134 NH	Decentralised bulk	Visualised plate waste	Overall increase in food consumed in bulk system compared to tray system Mean energy intake increased 1,555 kcal/day to 1,924 kcal/day
Wilson Evans & Frost 2000	108 H	Plated system Bulk system	Weight food intake	Less energy eaten with the plate system 414 ± 23 vs 319 ± 22 kcal (P<0.004) Protein 18 ± 1g vs 14± 3g (P<0.002) Fat 16 ± 1 g vs 11 ± 1g (P<0.003) Carbohydrates 51 ± 3g vs 41 ± 3g (P<0.01)

NH = nursing home H = hospital ERH = elderly rehabilitation hospital CCRC = continuing-care retirement community

Table 2.6 demonstrates that there seems to be an improvement with bulk meal delivery systems that create a family style dining service. Shatenstein, Claveau & Ferland, (2002) using visual plate waste showed that overall food consumption increased more than compared to a tray service (Shatenstein, Claveau & Ferland 2002). The overall difference between tray systems which are heated and delivered into dining rooms to that of a bulk service is the smell of food. The need to stimulate residents to eat and to create a home like environment is very important. The meal delivery systems should be designed to enhance the dining room providing residents with the opportunity to smell the roasts, pies and hot puddings.

Tray meal services also present another challenge for homes as they increase social isolation if residents eat all their meals in their room. The expected outcomes actually state that residents can choose to remain in their rooms as long as the room is prepared for the meal. Study by Kayser-Jones, showed that a large percentage of residents ate all three meals in their room (Kayser-Jones, 1997).

The meal delivery systems main function is to ensure that the meals arrive and are thermally supported when being delivered into the meal environment. Temperature plays a crucial role in the outcome of the meal system and can make or break a meal time for a resident. Food intake is reduced when hot food is served cold. The most important aspect of the meal is the first bite. It is this point in which the meal will be successful and eaten with satisfaction. If a meal is cold then the meal may be begrudgingly eaten or not eaten at all. Food temperature stimulates the taste and smell and sends vital information to the brain to stimulate the enjoyment or displeasure of the meal. Also food temperature will affect meal expectation as foods are crucial parts of the day for residents in their home. Foodservices need to get both production and meal delivery right to maximise the eating experience. The expected outcome in standard 4.8 highlights that meal temperature must be acceptable for hot and cold foods. Aspects such as the production and meal delivery systems may support a decline in malnutrition by offering choices through buffet services and ensuring meals are at the correct temperature (Leppert, 2007).

2.6.3 Dining room and the eating environment

A positive dining experience should foster independence, promote self-esteem and make resident as comfortable and safe as possible, while providing a nourishing pleasant meal (Connor, 1999; Speroff, et al, 2005). Providing a positive dining experience for aged care residents can be a challenge. Difficulty swallowing along with texture modified meals, makes it difficult to provide the types of home cooked meals each resident might prefer (Speroff, et al, 2005). Elderly people regard meal times as a welcome break and something to look forward to (Connor, 1999), structure

to their day and give residents a sense of independence and control over daily choices (Carrier, et al, 2009).

Another important function of the dining room is to ensure that residents are social and not isolated by eating in their rooms. There will be times when residents will need to stay in their rooms for meals due to clinical reasons. However, there is an issue in aged care homes where residents eat all their meals in bed and those residents that were often left in their rooms were physically and cognitively impaired (Kayser-Jones, 1997). It should be taken into consideration that some dining rooms due to poor design have insufficient space; however, residents are often left in bed as it took time to move them into the dining room (Kayser-Jones, 1997). From the Australian expected outcomes, the residents have a choice as to where they would like to eat whereas the Ontario supporting criteria states that meals served in rooms was only for clinical reasons and residents were to be fed in dining rooms. Residents that ate in their room where more likely to be poorly positioned, food was served cold, there was reduced social interaction and some residents were not feed at all (Kayser-Jones, 1997). It was shown that residents, on average, ate 44% more food when in a dining room setting compared to eating in their rooms (de Castro & Stroebele, 2002). Dining rooms allow staff to monitor what residents are eating, which is essential to prevent unintentional weight loss. With the levels of malnutrition and the population expected to get frailer it is an important point to ensure residents eat adequate amounts of food and fluids. Dining room services need to provide important social interaction and not be viewed as a task, often omitting important psychosocial care such as speaking with residents prior to feeding them. Staff providing feeding eating assistance need to show respect to residents at mealtimes by avoiding mixing of solid foods with liquids or mixing everything together to save time (Kayser-Jones, 1997).

When residents move into aged care homes they lose some of their independence and control including reduced access to familiar foods. While meals being prepared in aged care homes try to meet resident's preferences some residents are unable to shop and cook, the disadvantage of nursing home meals is the loss of freedom of choice about meal composition (Bale, et al, 2007). Foodservices menus are one of the most important functions in aged care. Food is a central and important part of every resident and each day foodservices across the nation strive to achieve the perfect meal where residents are satisfied with the quality and have enjoyed the dining experience. This is by no means an easy task. Each food, dining environment and staffing decision made will serve to either limit or expand the nutrition and eating pleasure for the resident for the rest of their life (Bale, et al, 2007). Dining room services in aged care should be designed to be home-like with meals served together. Staff should be seated to assist residents to eat and medications handed out

before the start of the meal to enable residents to enjoy an interrupted meal (Mathey, Vanneste, de Graaf, de Grout & van Staveren, 2001).

Mealtimes in residential aged care can be stressful. Manthorpe and Watson (2003) discuss the numerous difficulties care staff face in ensuring adequate dietary intake for older people. These include – time constraints to assist residents to feed, high dependency, loss of ability to recognise food, wandering behaviour, difficulty transferring food from plate to mouth, and problems with chewing and swallowing (Manthorpe & Watson, 2003). Manthorpe and Watson, describe helping someone to eat as being an interaction activity which relies on a range of movements for which co-operation is assumed. However, staff encounter resistive behaviours such as residents spitting food, turning their heads away and refusing to open their mouths (Manthorpe & Watson, 2003). The complexity of the issues associated with dining services and the maintenance of satisfactory nutrition and hydration levels for elderly residents is a challenge to maintain a home like environment (Crack & Crack, 2007). Batstone 1983 coined the terms "functional" and "domestic" to describe different ways of providing meals. Functional relates to the job of providing nutrition in the most efficient way possible, whereas domestic relates to social goals, personal needs and comfort during the meal Residents like to be in a general seating area and they like to stay in the same spot which gives them a sense of security. There is a theory that more food is eaten when people dine together (de Castro, 1993). This has been shown in other studies where nurses sat at the table and ate with the residents and this appeared to increase food intake. Family style dining and a meal delivery system which supported this enabling residents to choose food at meal time also had a positive increase in food intake (Nijs, et al, 2009; Keller, Carrier, Duizer, Lengyel, Slaughter & Steele, 2014). Little is known about how dining room services function in Australia and what challenges staff and residents face during meal services.

2.6.4 Ambiance

There are many aspects to eating and dining rooms in aged care homes provide the eating experience, giving residents the opportunity to socialise and consume meals (Hoteling, 1990). However, dining room set up, space and ambiance can affect the way in which residents interact with the meal and hence have considerable impact upon food intake. If the room is too noisy, or there is unpleasant coughing or choking this can distract residents. Food intake in nursing homes depends to a large extent on the quality of food service system. Tray meal services detract from the ambiance of dining rooms. Since poor appetite leads to insufficient dietary intake in the elderly, a stimulating meal ambiance of the smell of food and dining room services to support food intake should be considered a priority for meal services (Mathey, et al, 2001).

2.6.5 Conclusion to transformations

Both the production and meal delivery systems are crucial in ensuring that food is produced and presented in an attractive way once they come to the dining room. The purpose of the dining room is to ensure that residents have a pleasant place to eat their meals. All three of these systems need to function together to achieve the outcome of the meal environment system. When a person enters an aged care home their world can be dramatically changed in regard to reduced living space, living with other people and their previous eating patterns (Bonnel, 1993).Therefore the transformational system plays a crucial role in establishing service provision.

2.7 SECTION FOUR
MEMORY INFORMATION SYSTEM

The information system plays a crucial role in the meal environment. It provides the information for the production system, menu and ultimately can have a large impact upon the quality of the meal service. No system is successful if it does not have timely, reliable data on which to base is functions. The expected outcomes highlight that resident preference data and dietary information it's collected for menu planning purposes. Very little is known regarding how information systems are designed managed and perform in the meal environment.

2.8 SECTION FIVE
SYSTEM FEEDBACK

Feedback indicators are in some way outputs as well as they are the measure to inform how things are going and are progressing to help to prime the system for improved changes. A number of measures can be used to help determine how the meal environment system is working.

The residents in aged care play an important part in the development of the menu in their feedback. The expected outcomes of the Australian standards have indicated in 4.8 (b) that residents participate in menu planning and food presentation and in 4.8 (d) that individual resident preferences are sought and acted upon. Very little information could be found in Australia. Chisholm 2011 observed that there was limited resident feedback in menu development; residents appreciated cooks who sought feedback from them and who took complaints seriously (Chisholm, et al 2011). The supporting criteria in Ontario Canada mandates that residents must be offered two choices and menus must be planned by resident's preferences. However, menus planned from scratch were very time consuming and food acquisition, preparation and method of production and funding were the main influences in the way menus were planned (Ducak & Keller, 2011). In Australia very little is known regarding the types of strategies used to planned menus and what kind

of feedback residents are providing. Homes were encouraged to involve residents in decisions about meal schedules, menus and dining location and be open minded in the assessment of risk or benefit of therapeutic diet changes.(Robinson & Gallagher, 2008). Factors that prompted a change in menus ranged from likes/dislikes of residents (100%) to staff customer satisfaction (18%). Input for menu planning was most often obtained from residents by informal input (91%) and least often as feedback from families (27%). Approximately 2/3 of aged care homes indicated that their last major menu revision was conducted within the last two years (Lengyel et al, 2003)

2.8.1 Plate waste

Plate waste is the amount of food left on a plate and can be used as a method to measure food acceptability and provide valuable information for menu planning and nutritional intake of residents. Plate waste can be measured in two ways, firstly by weighing the food remaining on the plate and secondly by observing how much food remains. Both methods can be used to determine individual food intake or waste at the group level and how a transformational system is performing (Spears, 2000). Studies have shown that the technique of using a visual estimate to predict food consumption is a valuable means of assessing intake of residents (Shatenstein, Claveau, Ferland, 2002; Nowson, Sherwin, McPhee, Wark & Flicker, 2003).. However, there are some inherent flaws associated with observational assessment that could compromise the accuracy of this method (Castellanos & Andrews, 2002). Table 2.7 shows how the meal delivery system can impact on plate waste.

Survey data collected indicated that 85.7% of elderly patients stated that the reason for food waste was that the portions were too large, but when staff were asked why elderly patients leave food on the plate, only 57.1% stated that portion was too large (Kelly, 1999). What makes acceptable plate waste? Nichols et al 2002 collected data from 140 residents measuring 3 meals in a three day period. Overall, food waste was 20% with less waste with softer and desserts foods suggesting that the nutrient intake of the elderly might be enhanced if more soft and dessert items were on the menu (Nichols, Porter, Hammond & Arjmandi, 2002).

Table 2.7 outlines some of the issues to do with the meal delivery system in terms of tray waste. Residents in care can choose to remain in their rooms. Very little is known regarding the usage of tray services in aged care and whether it as an impact on resident intake. Plate waste can also indicate the meals which are best consumed which provides valuable data for menu planning. A study by Giampaoli & Khanna, showed that plate waste was highest for vegetables at 44% with desserts having lower plate waste due to popularity (Giampaoli & Khanna, 2000).

2.8.2 Monitoring food consumption

Observational plate waste can determine individual and group nutritional intake and can provide valuable feedback information on meal consumption and menu planning. Care staff have been shown to routinely overestimate the food intake of residents ranging from 15-22% (Pokrywka, Koffler, Remsburg, Bennett, Roth, Tayback & Wright, 1997; Simmons & Reuben, 2000; Castellanos & Andrews, 2002).

Castellanos et al reported that breakfast is the most frequently overestimated meal of the day (Castellanos & Andrews, 2002) with this overestimation being 1.8-8.5% (Simmons & Reuben, 2000). Additional reasons for inaccurate reporting of resident's dietary intake included limited training or knowledge of staff, insufficient staffing, high levels of staff turnover (Simmons & Reuben, 2000) and delays in transferring consumption estimates to the resident's records (Pokrywka, et al, 1997; Simmons & Reuben, 2000). The actual process of observing food is a difficult task. Foods that are amorphous, particularly density and have only a small quantity of light weight volume ratio such as mashed potato have been identified as being more difficult to quantify (Nowson, et al, 2003). Also foods which lack structure such as texture modified foods (puree) were also difficult to estimate (Nowson, et al, 2003). Being able to correctly observe food intake and record this is vital in providing information to ensure that the system will respond to the needs of the individual resident. From appendix two the Australian expected outcomes 2.10 (a) suggest that residents' nutrition and hydration needs be assessed and reviewed, but it does not make any inference that residents at nutritional risk should be monitored. The supporting criteria from Ontario 68 (2d) states that a system to monitor and evaluate the food and fluid intake of residents with identified risk related to nutrition and hydration must be in place. A study conducted by Simmons et al (2002) illustrates why it is important to monitor resident's food intake. They found that 73% of residents were at risk of malnutrition. However, staff failed to identify less than half of those at risk (Simmons, Lam & Schnelle, 2002).

If food intake is not monitored for residents at risk the system will remain unsupportive with staff not required to ensure that residents are eating adequate amounts of food and fluids and menu planning for those residents is not adjusted with additional nutritional supports. The expected outcome does indicate that monitoring for residents on a texture modified diet of thickened fluid should be undertaken. A study by Kayser-Jones 1997 found that the percentage of food eaten by nursing home residents, as recorded by the nursing home staff, is often in error, estimating a higher amount than actually consumed representation. It was shown that often residents left 25% or more

of the food on their plate and the chart documentation found that the percentage eaten repeatedly was inaccurate representing a gross under-estimate of food intake (Kayser-Jones, 1997).

2.9 SECTION SIX
SYSTEM OUTPUTS

Outputs are the products, services and outcomes that are developed as a result of the transformations that deliver the objective of the meal environment system (Lengyel, et al 2003; Gregoire, 2013). Outputs determine if the system is working. The primary focus with the meal environment is that the resident receives the appropriate menu items every meal, consume enough food and fluid and are satisfied with the service. The whole system relies upon providing correct menu items in its design, understanding of the residents' nutritional needs, correct dining room environment and staffing to ensure the successful transition of food from the plate to the resident to maintain quality of life.

2.9.1 Quality of life in residential aged care homes.

Quality of life encompasses optimal health and wellbeing and incorporates many dimensions of human experiences, ranging from those associated with obtaining the necessities of life, food, shelter and clothing to those associated with fulfilment (Gilmore & Russell, 1992). Nutrition status is strongly correlated to quality of life (Keller, Ostbye & Goy, 2004). Food and meal times are considered to be some of the most important aspects of quality of life in RACH's (Innes-Farquhar, 2000). Conversely, nutrition risk due to lack of access to food, depression, functional decline, and lack of enjoyment of food are negatively correlated with quality of life (Evans, et al 2005). Quality of life is a subjective and objective phenomenon that includes both the conditions and the experiences of life of the individual (Evans, et al, 2005).

The relationship between health status and the relative importance of quality of life is particularly important in understanding residential aged care. The elderly will have medical issues, which, no matter what, will lead to reduced quality of life. Many residents have underlying conditions that make them extremely vulnerable. These conditions impact on the resident's ability to experience a high quality of life. Residential aged care is provided over an extended period of time to a population with rapidly changing needs. The relationship between quality of care and quality of life can change over this time for an individual. At times the change can be rapid, though more often it is gradual. As a resident's needs and expectations vary, their quality of life may decline despite high quality care (Campbell, 2007). The quality of care in nursing homes is multidimensional because it must comprise not only clinical (medical and nursing) care, but also social and environmental

support of the residents (Wan, Breen, Zhang & Unruh, 2010). Residents need to have their basic needs met, but also need a decent quality of life during all stages when living in RACH's.

2.9.2 Quality of the meal environment

Though its nutritional value is important, food means more to individuals than just a source of nutrition. Few would discount its value in terms of social interaction as well as emotional satisfaction (Saunders, Stattmiller & Kirk, 2007). The meal environment in aged care homes provides an opportunity to enhance the quality of life of residents by ensuring the outcomes of the system meet the expectation of residents (Gilmore & Russell, 1992; Wright, et al 2010).

Earlier in this literature review, physical, social and cognitive decline increased the need for the meal environment system to respond. There has been a shift of the cause of death from infectious diseases towards chronic conditions and the role of the menu in aged care is to provide nourishing tasty meals (Bale, 2009). For this to be successful it must be supported by all aspects of the meal environment. Food is an important quality aspect for most residents, especially when they do not have a lot of control or the ability to exercise choice (Ball et al, 2000). Meal services provides the opportunity for residents to express food preferences and to make a choice, the ability to feed themselves, receive attractive food and experience a pleasant dining atmosphere (Cluskey & Dunton, 1999; Gilmore & Russell, 1992). Lengyel et al found elderly satisfaction with meals and food service was related to a number of quality of life issues. These included food variety, quality, taste, appearance and autonomy of residents. Particularly in relation to food choice and snack availability (Campbell, 2005). Dietary intervention through menu planning may not extend life but will enhance the meal experience for enjoyment which leads to improved quality of life.

The meal environment system provides a very important component of care. It must have a holistic approach and consider a wide range of residents at different stages of aging. The meal environment therefore plays an important role in aged care, how services are set up and function, what role the menu plays in the delivery of nutritional care and how the menu can nutritionally support this heterogeneous group to deliver optimal nutritional care. For residents, quality in foodservice delivery reflects the importance of a normalised and homely approach eg table cloths, china crockery, access to healthy fresh food, choice and variety (Campbell, 2007). International research highlights that malnutrition is a considerable health issue as already discussed and as such has serious health and quality of life implications (Crogan, Evan, & Velasquez, 2004; Campbell, 2005). The meal environment in aged care has an essential role in maintaining good quality nutritional care and maintaining quality of life for residents. Food intake and quality of life may be influenced by a resident's perceived satisfaction of the meals and food service provided to them. Reducing

malnutrition requires that resident's food requirements are met and that foods are presented so that they are enjoyed (Wright, et al, 2010). Food quality and food service are the key to quality of life for nursing home residents, contributing significantly to health, well-being and satisfaction of care (Shultz, Crogan & Evans, 2005).

2.9.3 Quality of foodservices

The production and meal delivery system is vital, as these two aspects of the meal environment system produce the foods and deliver it to the residents and hence can have an impact upon resident satisfaction. They are important in the food pathway to ensure that meals look appetising and are served at the correct temperature. Evans et al 2005 found that overall 89% were satisfied or somewhat satisfied with foodservice operations (Evans, et al, 2005). Although food quality is the best predictor of satisfaction with meals, residents also should be asked about satisfaction with the production and meal delivery system. These foodservice variables are important for influencing resident satisfaction. Wright et al 2011 found from a foodservice satisfaction survey that examined resident characterises and foodservice variables that the foodservice system variables were more influential in resident satisfaction then the food quality variables. The results suggested that modifications to current menu planning, foodservice delivery methods, addressing choice and reducing the time between meal choice and consumption increased resident satisfaction with the food production and delivery (Wright et al, 2011). Food and meals involve a complex array of attributes which go beyond the simple provision of nutritious food. While food quality and choice (Lengyel, Smith, Whiting & Zello, 2004) are known factors influencing resident satisfaction with meals (Crogan, et al, 2004), organisational factors can also have an impact on resident satisfaction. These included flexible options for meal delivery, relating to attributes such as timing of meals, amount of food and temperature (Campbell, 2005).

2.9.4 Quality of menu and meal planning

Resident satisfaction with meals and foodservices has a number of significant social and health outcomes (Crogan, et al, 2004; Lengyel et al, 2004). Satisfaction with meals depends on organisational factors such as food quality and presentation and staff attitudes during dining room services (Crogan, et al, 2004). Why residents fail to eat could be contributed to the quality of care including the time taken for staff and resident interaction during the meal service and the provision of foods that residents enjoy. Residents expect from the menu familiar, good-tasting food presented well (Puckett, 2013). Offering a variety of delicious, well prepared foods that satisfy residents will not only increase food intake but also meet expectations (Evans, et al, 2005). A satisfaction survey carried out by Evans 2005, showed that 52% of residents hated the food, 56% received the same

food and 59% received food cooked the same way (Evans, et al, 2005). In this study, residents did not believe that staff took the trouble to cook creatively, although they did view staff as caring about the food they served (Evans, et al, 2005). Given the importance of food quality to overall foodservice satisfaction and food intake, menus should focus on maximizing flavour and minimizing restriction on salt, sugar and fat (Wright, et al, 2010).

Good food was defined by residents as food that tastes right or good, is fresh or cooked from scratch and is cooked with care (Shultz, et al, 2005). Residents wanted to have a say about menu items and choice (Crogan, et al, 2004). Good resident-staff interaction can help decrease issues related to the menu and lack of food choice by giving residents more food when requested, listening to complaints and needs, intervening with mistakes in the kitchen, asking the resident if they need help, providing treats and trying their best to accommodate everyone. High levels of resident satisfaction occurred when the nursing home offered an alternative to the menu, invited residents to try new foods, selected new items for the menu and presented food attractively (Shultz, et al, 2005) Moreover, if residents are involved in the decision-making process, such as what, how and when they prefer to eat they are likely to be more satisfied with their meal service (Chou, Boldy & Lee, 2002).

Food plays an important role in the lives of residents in care. Food is the one item which residents still have some control over (Carrier, et al, 2009). Food is an integral part of our well-being and does provide nourishment but also food has a symbolic meaning and provides a sense of self and security for residents (Donini, et al, 2003). Food enjoyment is essential for quality of life (Vailas & Nitzke, 1998). Food plays an important part in creating menus which residents can identify with. Understanding what goes into menu planning for the current generation will assist in ensuring that menus are planned to cater for residents.

2.9.5 Meal consumption

The menu in aged care homes is the primary source of delivering the nutritional requirements for residents. Elderly people often have low intake of energy and nutrients for a variety of reasons such as change of appetite, smell, taste, dentition, eating ability and swallowing (Akner & Floistrup, 2003; Suominen, et al, 2004; Lammes, et al, 2009). It was found that of the elderly living in aged care homes only 22% of the elderly had a sufficient intake of key nutrients (Lammes, et al, 2009). Numerous studies have shown that energy and micronutrient intakes are inadequate in this population (Dunne & Dahl, 2007) as shown by table 2.7. The quality of interaction between nursing home residents and the personnel most often directly involved in meals service also affects the amount of food that residents consume (Evans, et al, 2005). The reason for the insufficient intake

was the menus were planned assuming a high expected intake and residents were unable to consume such quantities of food (Sempos, Johnson, Elmer, Allington & Matthews, 1982). It showed there is a general lack of consumption of food that contained these specific nutrients and therefore food needed to be more nutrient dense for the quantities of food consumed to provide appropriate nutrition (Nguyen, Flint, Prinsley, & Wahlqvist, 1985). Residents require their food intake to be monitored and menus need nutritional modification to meet daily nutrient requirements (Aghdassi, et al, 2007; Lengyel, et al, 2008).

Table 2.7 – Research studies on nutrient consumption in residential aged care homes

Author	Numbers of residents	Days menu analysed	Results
Sempos, Johnson, Elmer, Allington & Matthews 1982 USA	162 residents	One day food intake	Wisconsin nursing homes and residents has shown that energy and the nutrients magnesium, zinc, B6 total folic acid may be low in the food supply. Intakes of thiamine, Vit A niacin and Vit C were also low for 25% of the sample of men and women, low intakes of calcium, iron and Vit B12 were confined to women.
Barr, Chysomilides, Willis & Beattie, 1983 Canadian	30 women nursing home	5 day weigh food intake Delivery system tray	Food consumed revealed that average intakes of protein, vitamin A thiamine calcium and zinc were below the recommended levels Vit C niacin, iron, riboflavin exceeded recommended intakes
(Nguygen, Fling, Prinsley, & Wahlqvist, 1985 Australian	38 patients long stay hospital	3 day food intake record	such as folate, Vit C Vit E zinc and dietary fibre were below recommended levels
Gloth Tobin, Smith, Meyer, 1996 USA	50 residents	3 day food intake record	Dietary intakes of energy, protein, thiamine, riboflavin, niacin, Vit B6, folate, Vit C Vit D calcium iron magnesium and zinc Recommended Dietary Allowances Vitamin B6, zinc and magnesium were inadequate to meet the RDA
Nowson, Sherwin, McPhee, Wark & Flicker 2003 Australia	215 residents	One day food intake Visual plate wastage Breakfast Lunch Dinner	Calcium intake from meals was low NH 94% consumed less than 75% Fibre intake low 73% consuming less than 20g per day.
Suominen, Laine, Routasalo Pitkala & Rasanen 2004	23 residents	3 day food weighed	Vit D E folic acid were clearly less than recommended.
Grieger J.A., & Nowson, C.A, 2007 Australia	169	24hr plate waste Meal and mid meals	Energy less than 60% required, Protein not meeting EAR, calcium only 14$ of EAR, Folate only met by 21% of residents
Aghdassi McArthur, Liu, McGeer, Simor and Allard, 2007 Canadian	407 residents Nursing home Normal BMI 23	3 day food intake record	50% of the residents had suboptimal intakes of calcium, magnesium, zinc, and Vit E B6 and folate. 15% had suboptimal intakes of other micronutrients such as Vit A C niacin and copper
Lengyel Whiting & Zello, 2008 Canadian	56 residents	3 day food intake record	Inadequate intakes of folate, magnesium, zinc, Vit E Vit B6 Vit C protein niacin thiamine Vit B12 Calcium Vit D and fibre.

Some of the results were based on nutrition recommendations and this raises questions about the appropriateness of RDI for elderly people, vulnerability of residents from a nutritional point of view and the nature of nutrition care systems in aged care (Nguyen, et al, 1985). If residents have difficulty meeting the nutrient recommendations by consuming food alone, nutritional supplementation or tailored fortification practices of certain foods may be needed (Lengyel, et al, 2008). In the meal environment it has been said that the menu is often adequate in what it provides to residents (Suominen, et al, 2004 & Leslie, 2006). It is the meal environment which is the issue not the menu. Residents are frail and face many challenges which the meal environment needs to meet. If the meal environment system fails the resident anywhere along this system then it is a system cause. Lack of food intake has been cited as the cause for loss of interest in food, inappropriate diet restriction, lack of taste, poor dentition and mental disabilities (Chiam, 2008), staff unawareness, feeding eating assistance, poor techniques in feeding and sup-optimal dining room environments (Crogan et al 2001).

2.9.6 Quality in the dining room service

The meal services can also have broader and emotional implications for residents. Satisfaction with meals has been found to be related to a number of complementary attributes such as the pleasantness of the physical environment in which meals are served and the atmosphere and the opportunities for social interaction associated with the meal service. Food and meals were also found to become a major part of the lives of dependent residents and had an influence on their assessment of other factors – becoming a symbol of security as well as a vehicle for social integration and socialisation (Chou, et al, 2002). . Staff also provide an enhanced dining experience if they are friendly and courteous and ask how the resident enjoy the food (Shultz, et al, 2005). On the other hand staff can put up barriers to quality menu and dining room food choices when they with-hold food, fail to provide an alternative until it is too late, set up food service for their own convenience, fail to respond to suggestions and make excuses for improperly prepared food.

Satisfaction with the meal service was influenced by satisfaction with the physical environment, social interaction, staff care and resident involvement, either directly or indirectly. It is not difficult to explain why physical environment and staff care have a positive impact on resident's satisfaction with meal service. Restaurant type service, pleasantness, physical environment and staff create an atmosphere that increases resident's appetites and produces an emotional reaction receptive to enjoying a meal. Regarding social interaction, the results indicate that if residents eat with their close friends they are likely to enjoy their meals. Location of their meals, cleanliness of the dining area, times meal were served, and the friendliness of the food service staff were seen as positive and

important for residents satisfaction (Lengyel, et al, 2004). . Kayser Jones (1997) highlighted the need for dining room set up and feeding eating assistance to provide residents with the best level of support, that residents be seated correctly and provided with eating implements which maintain independence.

2.9.7 Conclusion to system outputs

The meal environment contributes to the health status, quality of life and autonomy of aged care residents. To ensure nutrition status of residents, the meal environment should always be monitored to determine which aspects of foodservices are important to residents and which provide the most dissatisfaction. The results of this outcome forms part of the feedback into the system. For outputs to be achieved, all of the above need to work together contributing to the other parts of the open system which cannot work in isolation.

2.10 CONCLUSION – THE MEAL ENVIRONMENT SYSTEM

The discussion has allowed insight into the complexity of the meal environment and all the parts which make up the working structure of this system. This is a complex system and many components need to work together to enable the system to deliver its primary outcomes of residents enjoying the foods they receive, gaining appropriate nourishment from the foods and fluids which leads to a high quality of life.

The complexity should not be underestimated. Having now examined the aged care meal environment using the system theory, it is quite clear that there are many competing forces which need to be considered to ensure that the primary objective is reached. The controlling aspects of the Aged Care Standards poses a challenge to homes as no national menu planning guidelines exist and those that have been developed are inconsistent in their approach. The nutritional recommendations used by this country to support adequacy in menu planning are also inappropriate as they are assuming that what is recommended will suffice to a population group very heterogonous with a complexity which varies across all health care requirements. The current elderly population in aged care homes would be better served if their dietary requirements could be based on their care level, not on what is recommended for a group. This poses the largest challenge for development of menus in aged care to meet the needs of a group of individuals. Menu planning is an important component of this system and that is why attention is being drawn to its design. As one of the major controlling factors its development underpins every aspect of the meal environment system

Aged care homes need to be mindful that as a resident enters a home they must change the way they traditionally think about meals to fit into their new environment. This change can lead to a loss of

identity which can impact upon their quality of care (Shultz, et al, 2006). This makes the entire meal environment system important to provide a menu which will meet the resident's expectation in terms of traditional, comfort foods, tasty and enjoyable so that meal times are looked forward to and that the dining room experience enhances the meal and its consumption. The meal environment must be sensitive to all residents' needs and the components which underpin the meal environment system must work together. From the literature many examples have been provided to demonstrate how the system effectiveness can be impacted upon by individual components of this system.

The organisational complexity in aged care provides many barriers. This often means that nutrition is not seen as the priority. Little is known about how aged care foodservices function, how menus are planned or designed and their impact on the meal environment system. Residential aged care in Australia has seen a shift to caring for residents who are older and frailer with a reduced cognitive function. The ability to plan and design menus requires feedback from residents who are increasingly unable to participate in this process. The meal environment system is large, complex and interwoven within its system parts. Very little is known about the quality of how this system is functioning and how the current standards operationally function and what impact they have on menu planning and the quality of this system.

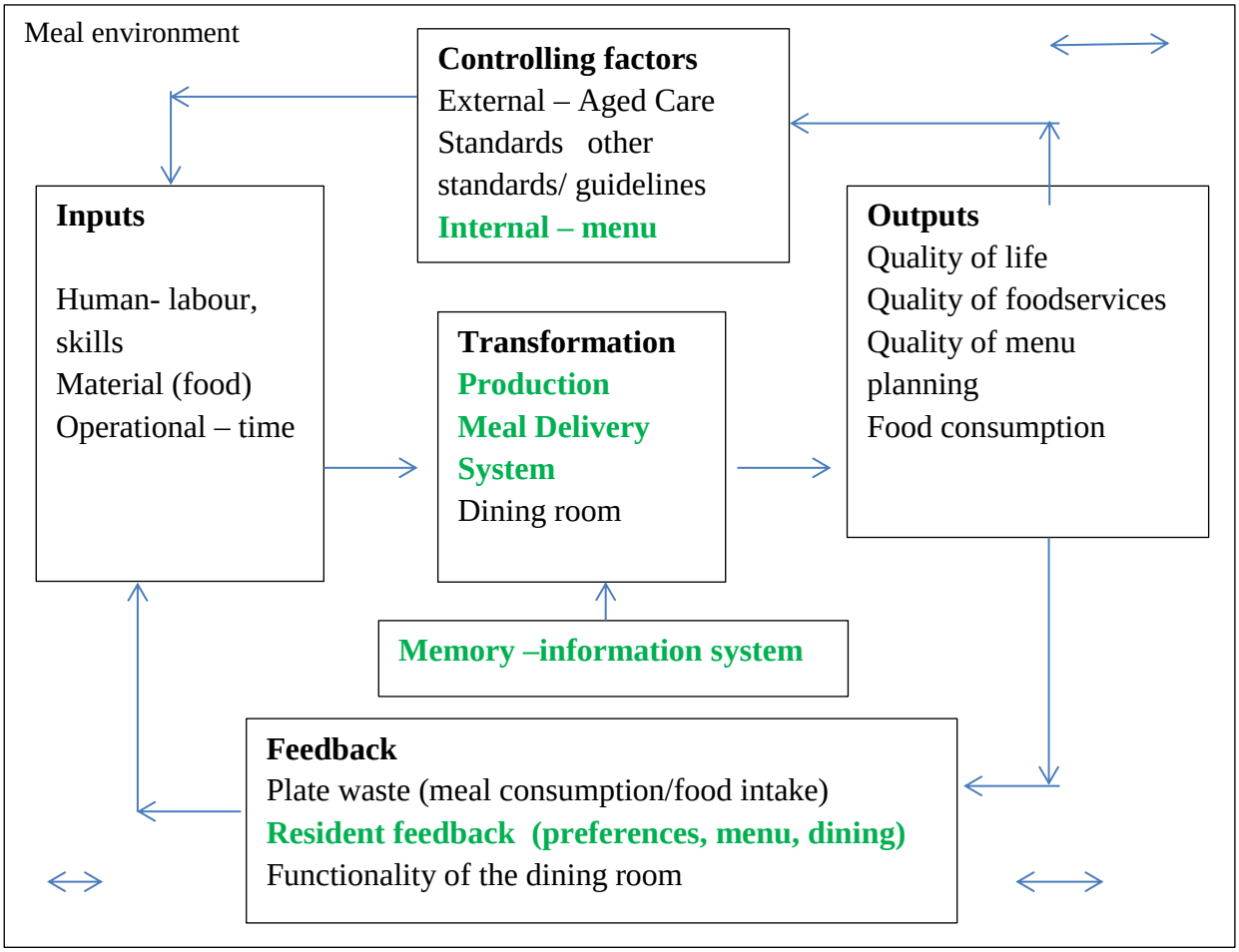
CHAPTER THREE STUDY ONE - NATIONAL MENU SURVEY RESIDENTIAL AGED CARE

3.0 OVERVIEW

The aim of this study is to gain an understanding of how foodservices operate in residential aged care in Australia by utilising a national menu planning survey to broadly gather information on the meal environment system as shown by diagram 3.1.

The National Menu Survey provided a good overview of residential aged care foodservices and highlighted some areas for further investigation meeting the objective 1.2.2.

Figure 3.1 Study one -system outline investigating the National Menu Survey



Adapted from Vaden, 1980

3.1 DESIGN

The National Menu Planning Survey (Appendix four) collected information which was grouped into three sections. As part of the data collection, Homes were asked to send in a copy of their current menu to be utilised in study two.

3.1.1 Section one – Home and foodservice information

This section gathered information on general demographics. RACH's were asked to provide information on the type of home, the location, and resident numbers and care classification. They were also asked to outline the type of production system and if the production system was in-house or outsourced, the meal delivery system and the types used in the home, the person responsible for managing food service and the level of dietetic involvement in foodservices operations.

3.1.2 Section two – Menu information

Menu information was sought to gain an overall picture of how they are designed in aged care. Participants were asked to indicate the menu cycle length and seasonal menu changes and what meal components were used for breakfast, lunch, evening meal, mid-meals and fluids. The survey provided a space for participants to indicate what types of vitamised/puree mid-meal snack were provided on the menu.

To understand nutritional menu planning, RACH's were asked to provide information on special diets. This included the types catered for with additional foods and supplements usage broken up into three categories - liquid, powdered and pudding type. One important menu strategy used in aged care is fortifying menu items to increase the nutrient and energy density. RACH's were asked if they undertook food fortification menu strategies and to indicate the type and frequency of this strategy. To gain a sense of how menus are planned, RACH's were asked to provide information on menu feedback, barriers and what guides their selection of food items for their menus.

Finally RACH's were asked to indicate the portion sizes for normal and vitamised/puree meals. Portion sizes were collected in two ways; either by an actual portion size by grams or millilitres or by providing the quantity and number of serves from a recipe.

3.1.3 Section three – Staffing information

This section asked for some general information with regard to staffing and labour hours used in the production and delivery of food and also information on resident per day meal costs which included both labour and food.

3.2 SURVEY DESIGN

There are approximately 2688 aged care homes in Australia and a printed survey was considered to be the best means of undertaking the data collection across the nation (Australian Government Department of Social Services June 2014). The survey design was based around a paper self-administrated questionnaire where the respondents completed the survey themselves (Polit & Hungler, 1999). The survey design used multiple techniques to collect data. Closed-ended fixed-alternative questions allowed respondents only a yes and no option, and open ended questions and multiple-choice questions with a combination of choices raging from three to ten. The survey provided ample room for additional information to be gathered and for respondents to express their views (Polit & Hungler, 1999).

Survey method was chosen to collect information as it was deemed the most efficient method with this group. The published literature was silent on establishing who undertakes menu planning and the details of the process. Therefore the survey was developed by the PHD candidate and supervisory team on the basis of professional judgement it was adjusted in in October, November and December 2009. The final copy is appendix four. No national surveys exploring the constructs of menu planning could be found in published works. The survey took approximately one hour to complete.

3.2.1 Demographic data

Demographic data consisted of the state in which the RACH's was located and if it in a rural or metropolitan location. Aged care homes are divided into three types - Government, not for profit and for profit homes (Campbell, 2007). RACH's were asked to provide care classification as defined by the Aged Care Funding Instrument (low, dementia or high) and the number of beds under each classification (ACFI, 2009).

The foodservice production system was based on the three main types used across the world; cook-chill, cook-fresh, cook-freeze (Rogers, 2005; Singh, 2010). The production system can be either in-house or outsourced and for RACH's that indicated they outsourced their production, an opportunity was provided for them to indicate what company supplied their food products. Foodservice delivery systems were based on the three main types used in aged care dining services and included the tray system, bulk foods plated in kitchens and bulk foods plated in dining rooms (Singh, 2010). Respondents also had the opportunity to indicate if a mixture of delivery systems were used.

RACH's were provided with an opportunity to indicate the title of the position that was responsible for running food service operations. This list was compiled by reviewing the Institution of

Hospitality Care Web site for membership categories with some additional categories added from local knowledge.

Dietitians interface into aged care foodservices was measured to ascertain the level of dietetic input/consultation. Respondents were asked to identify if they were familiar with the self-regulating Accredited Practising Dietitians program from the Dietitians Association of Australia. They were also asked to comment on the status of employment whether full time, part time or as required. Respondents were also asked to comment on what part-time and as required meant in terms of visitation. Finally, to see if respondents understood the Accredited Practising Dietitians status, homes were asked to verify how they knew if the dietitian they engaged was actually deemed to be an Accredited Practising Dietitian and this was an open question response (Polit & Hungler, 1999).

3.2.2 Menu structure

The menu information was based around known literature on menu cycle and menu seasonality (Kinton, et al, 1999). The menu cycle options were between one to eight weeks or more. Seasonality menu options were from yearly to the seasons. Breakfast, lunch, evening meal, mid-meal snacks and fluids were determined by undertaking a small menu audit utilising 20 menus obtained randomly from RACH's in Australia. No methodology could be found, therefore, menu meal component and foods were counted to determine the meal pattern of possible foods placed on the menu (Appendix Five). RACH's were also given ample room to fill in additional food items which were not listed for selection. An additional question was added asking what kinds of mid meal snacks were provided for residents requiring a vitamised/puree texture modified diet.

The current rationale is to integrate therapeutic diets into the menu meaning one menu is used to cater for all residents (Bale, et al, 2007). Diets were chosen from literature outlining common diseases found in aged care from the American Dietetic Association (ADA report, 2005). RACH's were asked to choose from selected diet types to provide the numbers of residents on that diet and if there were any other diets that they catered for.

RACH's were asked to select the reason for providing additional supplements and foods. They also had the opportunity to further elaborate on the use of additional foods via a pre-determined food list and to indicate what type of supplements they provided, whether liquid, powders or puddings. Food fortification was asked by a dichotomous closed question to ascertain if a home undertook the process of fortification and if so, what types of strategies were employed and the frequency of use (Polit & Hungler, 1999). RACH's then had the opportunity to indicate the types of food fortification strategies used and the list provided to RACH's was worked out by examining the literature for the

most popular forms of food fortification strategies used (Barton, et al, 2000) and some basic ingredients used in cooking.

Standard portion size was designed around two methods of data collection. RACH's could fill in portion sizes (general and vitamised/puree) using grams or millilitres per serve or the actual quantities used to make a recipe with the amount of serves (Spears, 2000). The actual list of foods was derived from the selected menu pilot for daily coverage (Appendix five).

In regard to menu organisation, RACH's were asked open ended questions regarding menu feedback, barriers and what guides menu planning. For menu choice, respondents were asked to choose from a set list of possible times ranging from immediately prior to consumption to upon admission into the aged care home.

3.2.3 Staffing information

Homes were asked to respond in relation to food production and food delivery staffing numbers. Full time staffing equivalents were requested. The final question on the survey was the resident per day meal cost which included both labour and food costs.

3.2.4 Survey distribution and ethical approval

The survey was distributed in hard-copy format as a postal survey and comprised 12 pages in January 2010. It was accompanied by an information letter and a reply paid envelope was included. Ethical approval was obtained from the University of Queensland, School of Human Movement Studies Ethics Committee HMS09/0212 (Appendix Six) and information letter (Appendix Seven)

3.2.5 Sampling framework

The survey was sent to the Hotel Services/Catering Manager at two thousand six hundred and sixty four (2664) aged care homes across Australia. RACH's were identified using the Australian Aged Care Database on CDROM -2010 (ATA, 2010). CD provided names and addresses of aged care homes across Australia. Consent was considered to be implied, once the survey was completed and returned. Homes were given 14 weeks to return the survey to the University of Queensland. RACH's were reminded to return the survey by notices being placed in key aged care online publications 'Aged Care and Community Services' and the 'Aging Agenda' at 10 weeks. When returning the survey RACH's were asked to provide a copy of their current menu.

RACH's were able to contact the researcher to discuss and/or clarify the menu survey and they were asked to include the name of their home on the survey if they chose to. All information was

subsequently de-identified by assigning each survey a number code and removing the name to ensure home data was confidential.

3.3 DATA ANALYSIS

Results were coded numerically and entered into SPSS (Student version 18 Chicago IL USA) as shown in appendix four.

3.3.1 Demographic data

Frequency analysis was used to examine the following: location by state, whether rural or metropolitan, and classification by Government, not-for-profit, or for-profit. Total count was used to determine the number of beds classified across care levels. Frequency analysis was used to indicate the types of production and delivery systems currently in use and also to examine who managed foodservices and what part did dietitians play in this service, whether fulltime, part time, as required or not at all. Thematic analysis was used to group the verification of Accredited Practising Dietitian status as reported by RACH's.

3.3.2 Menu cycle and meal component

Menu cycles were coded as the number of weeks, eg 4 week cycle menu was coded using the number four and seasonal variation was coded using one for no menu change all year, two winter/summer and three for autumn/spring to determine the most frequent cycle and seasonal variation. Meal, mid meal and fluids components and food items were listed individually and then counted to determine the frequency of these items included from the list supplied.

The vitamised/puree mid-meal snack data was grouped based on similarity of the written information provided. RACH's that left this space blank and recorded in the special diet information that they did cater for residents requiring a vitamised/puree diet, were marked as not providing a vitamised/puree mid-meal snack. The range of food items listed was then assessed for frequency as per each group of foods.

3.3.3 Additional foods, supplements and food fortification

RACH's were asked to provide information on the additional foods served and supplementation usage. Frequency was used to indicate the reasons for providing additional foods and what was the most common. The use of supplements was analysed by asking RACH's to indicate what types were purchased (liquid, powder or pudding type) and to indicate which brand was purchased. Only purchased products from a company were analysed. To understand how menus are fortified,

RACH's were asked to discuss their food fortification strategies including occurrence and frequency.

3.3.4 Portion size

Portion size was entered into the data sheet as a minimum and maximum for both the normal and vitamised/puree texture. The data was analysed using the frequency of number of RACH's that suppled portion data, the maximum and minimum portion sizes and the mean value for each food component. A comparison was undertaken between the normal and the vitamised/puree texture portions sizes.

3.3.5 Menu organisation and planning

RACH's were asked open ended questions regarding menu planning for feedback, guidance and barriers. The frequency of responses were recorded and analysed for patterns. For menu choice, frequency analysis was used to collate the time frame used by homes for resident's menu choice.

3.4 RESULTS

3.4.1 Study Population

The study population was aged care homes across Australia. Two thousand six hundred and sixty four (2664) surveys were sent out via mail. Two hundred and seventy four (274) surveys were returned (10.3%).

Table 3.1 details the demographic data of the surveys returned compared to the national data on the current state of residential aged care in Australia. Chi–square analysis indicated that the sample was representative with the return of 10.3%. The surveys also follow the pattern of what is currently the national situation. The survey data returned represented 20,808 aged care beds. This represents 10% of all aged care places in Australia.

Table 3.1 Demographic data from the National Menu Survey compared with National demographic data for Aged Care Homes

Demographics N=274	Number of surveys completed	Percentage	National demographic percentage figures*	Significance***
Location by state (Count)				NS
NSW	86	31	33	P=0.243
VIC	80	29	25	
QLD	58	21	17	
SA	18	7	10	
WA	21	8	9	
NT	3	1	1	
TAS	5	2	3	
ACT	3	1	1	
Total	**274**	**100**		
Location by region				NS
Metropolitan	181	66	57	P=0.157
Rural	93	34	43	
Total	**274**	**100**		
Ownership				NS
Government owned	31	11	6	P=0.199
Not for profit	162	59	59	
For profit	76	28	35	
Did not specify	5	2		
Total	**274**	**100**		
Total number of beds	10964	53	215,000*	
High care	7157	34		
Low care	2687	13		
Dementia specific	**20,808**	**100**		
Total				
Size of facilities				
<100 bed	200	73	Average bed 61**	
100 to 150 beds	30	11		
150 to 200 beds	15	5		
Over 200 beds	8	3		
Did not specify bed numbers	21	8		

*Total number of beds taken from the Productivity Commission Report 2010

** Average bed number taken from the Productivity Commission Report 2010

*** chi square test two t

3.4.2 Menu Data Analysis

3.5.2.1 Menu cycle and seasonality

Table 3.2 outlines the length of the menu cycle used in RACH's. Menu cycles can vary in length and the most frequently utilised menu cycle length was four weeks (77%). Only 5% of aged care homes used 5 weeks, 9% used 6 week cycles and 6% used menu cycles of less than 4 weeks. The most popular menu seasonality change occurred for the seasons of winter/summer with 56% of homes indicating that the menu is changed. No seasonal change to menu accounted for 37% of homes indicating that these homes used the same menu all year.

Table 3.2 Menu characteristics cycle and seasonality if those that responded

Menu characteristics n=274	Frequency	Percentage
Menu cycle		
1 week	4	1
2 weeks	11	4
3 weeks	3	1
4 weeks	210	77
5 weeks	14	5
6 weeks	23	9
7 weeks	1	0.5
8 weeks	6	2
> 8 weeks	2	0.5
Seasonal variation in menu		
Same menu all year	102	37
2 season (winter/summer)	154	56
2 season (autumn/spring)	2	1
Changed every season	13	5
Missing values	3	1

3.4.2.2 Meal and menu components across the menu pattern

Table 3.3 outlines the number of RACH's using the provided meal components in menu planning. For breakfast, toast was offered by 100% of homes, porridge (99%), cold cereals (98%), juice (95%) and yogurt at (80%). At lunch time, 100% of homes offered meat, white and green vegetable. For the evening meal 99% of homes offered sandwiches, soups, salad (94%), bread (85 %) and fresh fruit (85%). For the mid meals snacks biscuits are the predominant food item used for morning tea (94%), afternoon tea (95%) and supper (87%) respectively.

Table 3.3 Specific foods items included across the menu pattern by respondents

Meal component n=274	Number of homes offering meal component	% Number
Breakfast		
Toast	274	100
Porridge	272	99
Cold cereal	269	98
Juice	261	95
Yogurt	219	80
Egg	206	75
Bacon	178	65
Fruit toast	130	47
Tomato	114	42
Crumpets	35	13
Muffins	35	13
Pancakes	33	12
Lunch		
Meat	274	100
White veg	274	100
Green veg	274	100
Orange veg	267	97
Dessert	267	97
Alternative meat	220	80
Salad	206	75
Fresh fruit	193	70
Tinned fruit	191	70
Sandwiches	178	65
Bread	124	45
Soup	80	29
Evening meal		
Sandwiches	271	99
Soup	270	99
Salad	257	94
Bread	232	85
Fresh fruit	232	85
Hot meat	220	80
Dessert	210	77
Vegetables	173	63
Tinned fruit	169	62
Yogurt	163	59
Finger foods	160	58
Morning tea		
Biscuits	259	94
Cake	228	83
Scones	212	77
Fruit	166	61
Pikelets	145	53
Yogurt	130	47
Fruit bun	116	42
Sandwiches	96	35
Afternoon tea		
Biscuits	261	95
Cake	209	76
Fruit	166	61
Scone	148	54
Yogurt	113	41
Sandwiches	96	35
Pikelets	90	33
Fruit bun	72	26
Supper		
Biscuits	239	87
Sandwiches	202	74
Fruit	115	42
Yogurt	84	31
Cake	77	28
Scone	27	10
Fruit bun	25	9
Pikelets	22	8

3.4.2.3 Fluids for mid-meal snacks

Table 3.4 outlines what fluids are offered by RACH's and at what frequency. The data reveals tea, coffee, milk, water, milo and cordial for morning and afternoon tea are beverages offered by over 80% of RACH's. Fruit juice was the next popular most beverages offered with 72% for morning tea, 66% for afternoon tea and 61% for supper.

Table 3.4 Specific Fluids for mid-meal snacks included by respondents

Fluids n=274	Frequency of food item used in menu planning	Percentage of food item used in menu planning
Morning tea		
Tea	269	98
Coffee	269	98
Milk	255	93
Water	240	88
Milo	228	83
Cordial	222	81
Juice	198	72
Flavoured milk	114	42
Soft drink	86	31
Supplement drinks	41	15
Soda water	16	6
Alcohol	0	0
Afternoon tea		
Tea	267	97
Coffee	267	97
Milk	251	92
Water	242	88
Cordial	233	85
Milo	220	80
Juice	182	66
Flavoured milk	114	42
Soft drink	94	34
Supplement drinks	38	14
Soda water	21	8
Alcohol	3	1
Supper		
Tea	264	96
Coffee	260	95
Milk	250	91
Milo	242	88
Water	228	83
Cordial	200	73
Juice	168	61
Flavoured milk	99	36
Soft drink	71	26
Supplements	24	9
Soda water	19	7

3.4.2.4 Vitamised/puree mid meal snacks

RACH's were asked to indicate on the survey what foods they would serve for residents on a vitamised/puree diet as shown by table 3.5. Only 52% of RACH's provided information about morning and afternoon tea, while 51% provided information about supper. Of interest is the fact that a high percentage of RACH's indicated that they actually catered for vitamised/puree meals, with 40% of RACH's indicating that they offered vitamised/puree food but did not fill in this part of the survey (refer to table 3.9). Results for this part of the survey were low and could indicate that vitamised/puree snacks are not widely offered even though texture modification is part of menu planning. Of the foods which are provided by RACH's only 30% offered puree fruit, 23% yogurt and 17% custard. Supplement drinks were provided by 6% of the RACH's for morning and afternoon tea and supper.

Table 3.5 Vitamised/puree mid-meal snacks offered in care homes in Australia

Vitamised/puree Food n=274	Morning tea Frequency (%)	Afternoon tea Frequency (%)	Supper Frequency (%)
Survey responses indicating that vitamised/puree mid meal snacks provided for residents			
Yes snacks provided	143 (52%)	143 (52%)	139 (51%)
Yes but no snack provided	18 (7%)	14 (5%)	14 (5%)
Yes but no indication on survey what snacks were provided	3 (1%)	4 (2%)	4 (1%)
No snack no indication on survey	110 (40%)	113 (41%)	117 (43%)
Food items used to serve mid meal snacks as indicated by homes n-143*			
Fruit	81 (30%)	78 (28%)	66 (24%)
Yogurt	64 (23%)	63 (23)	51 (19%)
Dessert	14 (5%)	15 (5%)	10 (4%)
Mousse	11 (4%)	11 (4%)	12 (4%)
Custard	46 (17%)	47 (17%)	39 (14%)
Cake	11 (4%)	14 (5%)	7 (3%)
Jelly	13 (5%)	12 (4%)	9 (3%)
Ice cream	5 (2%)	6 (2%)	3 (1%)
Pudding	5 (2%)	7 (3%)	6 (2%)
Biscuits	3 (1%)	3 (1%)	2 (1%)
Vitamised (no spec)	4 (2%)	1 (0.5%)	0
Vegetable	3 (1%)	1 (0.5%)	0
Mashed banana	2 (1%)	2 (1%)	2 (1%)
Supplement drinks	17 (6%)	16 (6%)	17 (6%)
Homemade drink	8 (3%)	8 (3%)	8 (3%)

*Numbers do not add to 100% as RACH's indicated more than one snack

3.4.2.5 Guiding menu food items selection

Table 3.6 outlines what guides RACH's to make menu item selection. The most popular way was gathering information from the residents through survey data collection (86%). Homes adjusted menus based on recommendations from dietitians (82%), menu meetings with residents (65%) and 61% consulted residents regarding the type of menu required for diet and cultural needs.

Table 3.6 Respondents reason for menu food items selection

What guides a home to select menu items n= 274	Frequency of what guides menu selection to plan menus	Percentage of what guides menu selection
Menu survey to residents	237	86
Menu assessment by dietitian	224	82
Menu meetings	177	65
Menu type (diet/culture)	166	61
Menu policy	102	37
Menu planning workshops	55	20

3.4.2.6 Menu planning feedback and barriers

Table 3.7 outlines the feedback and barriers that RACH's perceive when planning menus. The results indicated that again menu planning input is received from the residents (79%) staff feedback (71%) and the use of menu surveys (70%). Family input was 39% and complaints were 21%. What is interesting with these results is the perceived input that dietitians have with only 7% of homes indicating that this contributed to menu planning. This contradicts the data which was recorded earlier in the survey (table 3.6) where 82% of homes indicated that items were selected for the menu based on assessments made by the dietitian. There may be some survey bias in this area as it is a predetermined tick box then to actually think of who has the greatest input into menu planning in aged care.

The same pattern in the menu selection guidance in table 3.7 where 42% of homes indicated that residents were involved, and items such as season/climate (30%) and cost of food (29%) are other considerations when selecting items for a menu. Again the dietitian influence is only 19%. Barriers to planning the menu included costs (38%) and resident likes and dislikes (28%). The numbers for this part of the survey were low and this data is providing a minimal snap shot.

Table 3.7 Reasons reported by respondents as sources Menu planning feedback, guidance and barriers

What input/barriers to menu planning n=274	Frequency input/barriers	% frequency
Menu planning feedback		
Menu feedback residents	217	79
Staff feedback	196	72
Menu survey	194	71
Family	104	38
Complaints	58	21
Dietitians feedback	18	7
Plate wastage	15	5
Menu selection guidance		
Residents	115	42
Season/climate	83	30
Cost of food	80	29
Family members	69	25
Likes/dislikes	55	20
Dietary issues	55	20
Dietitians guidance	53	19
Food safety	50	18
Planning menu barriers		
Cost	104	38
Likes/dislikes	76	28
No barriers to menu planning	34	12
Nutrition reasons	27	10
Cooks attitude	17	6
Education level	9	3
Equipment	7	3
Food safety	6	2

3.4.2.7 Resident menu choice

Table 3.8 outlines the time frame regarding when residents can choose their meals from the menu. The options for this part of the survey were from immediately prior to consumption (18%) to when the resident is first admitted to the home (11%). Overall 45% of homes indicated that menu choice was made within 24 hours.

Table 3.8 Timing of resident menu choice when choice is available

When resident can choose their meals n=274	Frequency	Percentage
Immediate prior to consumption	48	18
Few hours prior to consumption	76	28
24 hours prior to consumption	75	28
2 days prior to consumption	3	1
3 days prior to consumption	6	2
More than 3 days prior to consumption	23	8
Only upon entering home	31	11
Did not state anything on survey	12	4
Summary results *		
Within 24 hours	124	45
Greater than 24 hours	107	39
Only upon entering the home	31	11
Did not state anything on survey	12	5

*Results rounded to nearest 24hr

3.4.2.8 Special diets catered for in aged care homes

Table 3.9 outlines the frequency that menus cater for special diets within RACH's . RACH's indicated that they provide meals which are suitable for diabetics (87%) and vitamised/puree meals (92%), and weight loss (575%).

Table 3.9 Special meals in aged care homes as reported by survey respondents.

Special diet n=274	Frequency	% frequency
Vitamised/Puree Meals	251	92
Diabetes	239	87
Chopped up meals	190	69
Weight reductions	156	57
Cardiovascular	56	20

3.4.2.9 Additional foods and supplements as a menu strategy

Table 3.10 indicates that 99% of all RACH's provide additional food to residents. The reasons for providing additional food included reduced body weight (86%) reduced food intake (76%) and reduced appetite (75%). Of the additional foods which were offered, custard (79%) and yogurt (79%) were the most frequently used foods, followed by ice cream at 76%.

Table 3.10 Menu support - additional foods and supplements made available

Additional foods n=274	Frequency	% frequency
Additional foods provided	271	99
Reason for additional foods*		
Reduced body weight	237	86
Reduced appetite	205	75
Reduced food intake	207	76
Palliative care	193	70
Returned from hospital with weight loss	168	61
Low BMI <22	99	36
Additional foods		
Yogurt	217	79
Custard	216	79
Ice cream	209	76
Bread	177	65
Jelly	171	62
Cream	168	61
Biscuits	159	58
Flavoured milk	138	50
Cheese	138	50
Supplements		
Powder	213	78
Liquid	181	66
Puddings	110	40

*Reason why additional foods were chosen

3.4.2.10 Food Fortification

Table 3.11 outlines how food fortification is used as a strategy in menu planning. Overall, 78% of homes used some form of food fortification.

Table 3.11 Reported food fortification undertaken and strategies

Food fortification n=274	Frequency	Percentage
Food fortification undertaken		
Yes	213	78
No	58	21
Protein powders		
Yes	187	68
Cream		
Yes	131	48
Margarine		
Yes	84	31
Butter		
Yes	81	30

3.4.3. Foodservice analysis

3.4.3.1 Production and meal delivery systems

Table 3.12 outlines the types of production and delivery systems used in aged care. Cook fresh was the dominant production method utilised (71%) and 83% of RACH's preferred to cook in-house. Bulk plating in the kitchen occurred 31% and 27% used a mixture of tray systems, bulk plating in the kitchen and the dining room. This proportion are consistent with the candidate and advisory team's experience.

Table 3.12 Production and meal delivery systems described by respondents to National Menu Survey

Type of production system used in aged care facilities n=274	**Frequency**	**Percentage**
Production system in house		
Cook chill	33	12
Cook fresh	194	71
Cook Freeze	1	1
Missing value	46	16
Production system outsourced		
Cook chill	25	9
Cook fresh	11	4
Cook chill and cook fresh	1	1
Missing values	9	3
In house food production *	228	83
Outsourced food production	37	14
Missing values	9	3
Type of food delivery system used in aged care	**Frequency**	**Percentage**
Tray system	23	8
Bulk plated in kitchen	84	31
Bulk plated in dining area	27	10
Tray and bulk plate in kitchen	40	14
Tray and bulk plate in dining room	24	9
Mixture of tray system, bulk plate in kitchen and dining area	75	27
Not specified	1	0

Production system is controlled in house or outsourced to an external catering company

3.4.3.2 Foodservice management

Table 3.13 outlines the breakdown of responsibility for the management of foodservices within aged care. The summary data indicated that 14% of RACH's were managed by nursing staff, usually the director of nursing or assistant director of nursing. The largest proportion (78%) of RACH's had hospitality staff managing foodservices and this included catering managers, chefs, cooks and foodservice supervisors. Only 8% of RACH's had foodservices managed by administrative staff..

Table 3.13 Management of foodservices

Who is managing foodservices in aged care homes n=274	Frequency	Percentage
Assistant director of nursing	6	2
Director of Nursing	32	12
Catering Manager	50	18
Chef	44	16
Foodservice manager	23	8.5
Food Supervisor	28	10
Head cook	43	16
Hotel Service Manager	23	8.5
Resident support services	3	1
Administrative manager	20	7
Central manager	2	1
Summary of categories condensed from above *		
Nursing staff	38	14
Hospitality staff	214	78
Administrative staff	22	8
Non-foodservice background	60	22
Food service background	214	78

*Summary indicating the three areas undertaking foodservice management in aged care

3.4.3.3 Dietitians engagement in foodservices

Table 3.14 indicates that 85% of RACH's used a dietitian to support foodservices but only 4% engaged a dietitian full time and only 9% had a dietitian working part time. Some RACH's (5%) stated that they only used a dietitian when a problem occurred. The survey asked RACH's to indicate how they identified the credentials of the dietitian. A mixture of answers were provided, most (19%) indicated that they identified the credentials with a certificate which could not be specified.

Table 3.14 Reported dietitian engagement in residential aged care foodservices by National Menu Survey

Dietetic involvement in foodservices n=274	Frequency	Percentage
APD Dietitian supporting foodservices		
Yes used	232	85
No - did not use	42	15
Employment status		
Full time	10	4
Part time	25	9
As required	197	72
No employment status provided	42	15
For dietitians that worked Full time n=10	1	10
Daily	4	40
Weekly	5	50
Nothing stated		
For dietitians that worked part time n=25		
Monthly	13	52
Weekly	11	44
Fortnight	1	4
For dietitians that work as required n = 197		
Monthly	35	18
6 monthly	23	11.5
Yearly	53	27
Special diet request only	15	7.5
Quarterly	20	10
Problem or when requested	10	5
Not stated	41	21
How is APD status verified		
Unspecified certificate	52	19
Registration provided	17	6
Contract arrangement	5	2
On the HR file	12	4
Credentials shown	10	3.5
Provided by the company used	5	2
Qualification/Uni degree	14	5
Contacted DAA	4	1.5
By paper work	11	4
Health service employee	11	4
Other – no reason	8	3
Nothing stated	125	46

3.4.3.4 Portion size in foodservices general and vitamised/puree

Table 3.15 and table 3.16 outline the portion size data provided from the national survey for general meal and vitamised/puree meals. The sample of portion size data provided by homes was higher for the general meals with percentage return ranging from 48% to 54% compared to the percentage data returned from vitamised/puree survey date which ranged from 46% to 48%. Filling in the part of the survey was not carried out by RACH's with 50% of all homes for the general menu and less than 50% o for vitamised/puree meals. There is a large variation between the minimum and maximum serves used in RACH's.

Table 3.15 Reported portion size for general meal

Food item n=274-	Number (%)	Minimum Serve	Maximum serve	Gram variation between min and max normal serve
Porridge (g)	142 (52%)	42	275	233
Tinned fruit (g)	140 (51%)	40	175	135
Juice (ml)	145 (53%)	50	300	250
Meat (g)	148 (54%)	45	200	155
Wet Meat (g)	143 (52%)	53	225	172
Mashed potato (g)	147 (54%)	30	200	170
Orange vegetable	146 (53%)	30	102	72
Green vegetable	147 (54%)	30	102	72
Dessert (g)	138 (50%)	40	215	175
Custard (g)	145 (53%)	35	185	150
Soup (ml)	144 (53%)	65	280	215

Table 3.16 Reported portion size for vitamised/puree meal

Food item n=274	Number (%)	Minimum serve	Maximum serve	Gram variation between min and max vitamise serve
Porridge (g)	130 (47%)	41.5	275	233.5
Tinned fruit (g)	126 (46%)	40	175	135
Juice (ml)	130 (47%)	50	300	250
Meat (g)	131 (48%)	27.5	160	132.5
Wet Meat (g)	131 (48%)	40	225	185
Mashed potato (g)	130 (47%)	25	175	150
Orange vegetable	130 (47%)	25	130	105
Green vegetable	129 (47%)	25	130	105
Dessert (g)	127 (46%)	42.5	200	157.5
Custard (g)	128 (47%)	34	200	166
Soup (ml)	129 (47%)	65	280	215

3.5 DISCUSSION

The sample size of 10.3% was shown to be a representative therefore the following conclusions were made based. The demographic data also mirrored the national data as shown in table 3.1. As this is the first survey undertaken to examine menu planning and foodservices in aged care and it does provide some insight into the system.

3.5.1 Menu cycle and seasonality

The cycle length commonly used was four weeks which is a similar finding reported by other studies (Innes- Farquhar, 2000; Jackson, 2003; Carrier, West, Ouellet, 2006; Singe, 2010; Chisholm, et al, 2011). Risk of malnutrition was found to decrease with a longer menu cycle (28 days) versus a shorter cycle (21 days) (Carrier, Ouellet & West, 2007). Seasonality or at least changing the menu throughout the year, is an important aspect of menu planning. While the seasonal changes for RACH's was winter/summer, some RACH's (37%) used the same menu all year round. This highlights important issues surrounding choice, variety of foods as reduction in menu cycle and season menu changes will reduce these. It is important to take into consideration that the resident population in care often does not have access to any foods other than those on the menu. Hence the planning must provide variety and choice.

3.5.2 Menu pattern

The menu pattern used in aged care and the most popular foods are shown in table 3.17. This provides an outline to be used for study two (chapter four). The menu pattern highlights that three meals and three mid-meal snacks are offered each day and is consistent with finding by Chisholm et al, 2011. The main meal was lunch with a heavier dessert and the evening meal mostly consisted of four to five courses of a lighter nature. It is generally agreed that foods served to nursing home residents should include many familiar foods and be served in familiar patterns (Matthews, 1985).

Table 3.17 Menu pattern predominates use in aged care homes

Menu pattern	Food category	Popular foods	Fluids
Breakfast	Continental Hot breakfast	Porridge and assorted cereals Scrambled eggs	Tea Coffee Juice Cordial Milk Water
MT	Food	Assorted biscuits	
Lunch	Hot meal Dessert	Roast meat & vegetables Fruit pudding, trifle, fruit crumbles and ice cream	
AT	Food	Assorted biscuits	
Evening meal	Soup Hot entrée Desserts Salad Sandwiches Desserts	Vegetable types Scrambled eggs and pastry finger foods Fruit, yogurt, jelly, custard Variety Variety Custard, yogurt, ice cream, jelly	
Supper	Food	Assorted biscuits	

3.5.3 Vitamised/puree mid meal snacks

The results from this section raised a question regarding the information which is presented on the menu. The information provided was inconsistent with RACH's indicating that they had residents who required this texture modification (table 3.9) but then indicated nothing of what type of food on the survey (table 3.5). This led to study number five (chapter seven) being undertaken to ascertain the quality of vitamised/puree menu design in RACH's.

3.5.4 Process of menu planning

Predominately menu design information sources were from the residents and family with staff and menu planning surveys also being used. A study undertaken by Matthews, 1985 indicated that residents enjoyed having input, foodservice staff get feedback on new meal ideas and acceptance of the menu is maximised by keeping the resident and their needs as the core of the planning process (Matthews, 1985).

3.5.5 Menu choices

This initial investigation of when residents were able to choose from the menu ranged from point of service, three days prior to meal service to choice only being made upon admission to the aged care home. This raised further questions regarding what choice options are available on the menu. Choice is a very important component of the Aged Care Standards and a whole expected outcome (3.9) is dedicated to this aspect. It is interesting to note that upon reading the expected outcomes there is no mention of any choices surrounding meals or menu planning.

Food choice is an important quality aspect for residents and one where autonomy is limited. In one RACH 57% of residents reported having no choice about the menu (Ball, et al, 2000) and other studies showed 58% of residents stated that having control over food was very important (Donini, et al, 2003). Providing several choices at meal time tends to enhance food satisfaction and gives residents a sense of control (Carrier, et al, 2007). A study carried out by Carrier found no specific link between the risk of malnutrition and the number of main dishes choices per meal or seasonal variation (Carrier, et al, 2007). Whereas an increased food choice, more autonomy and active participation in the provision of food is linked with lower nutrition risk (Winterburn, 2009).

3.5.6 Special meals, additional foods and supplements

RACH's are faced with the challenges of caring for residents with complex needs (Barr et al, 1983; Bale, et al 2007). The survey data highlighted that homes used special diets but did not ask if they integrated the menu for these diets and therefore, further investigation was required in study two.

Nutritional support was used by RACH's for reduced body weight to improve appetite, to improved food intake, for palliative care, to treat weight loss due to hospitalisation and for residents with a low Body Mass Index. Studies by Crogan & Corbett, (2002) & Gaskill et al, (2008) highlighted these areas which are commonly found in aged care homes require nutrition support.(Crogan & Corbett, 2008; Gaskill, et al, 2008)

The use of nutritional supplements has been well documented (Gosney, 2003; Kayser-Jones, 2006; Beck, et al, 2008; Chernoff 1994). Food fortification is a key menu planning strategy providing foods that are fortified yet indistinguishable from their unfortified counterparts. This ensures that acceptability of the overall diet is optimised (Dunne & Dahl, 2007). The survey data indicates that 78% of homes undertook some form of food fortification and that protein powders were the most used strategy. These are used in residents' meals to increase the nutrient density without changing the flavour, texture or colour and the make high protein drinks (Chernoff 1994).

3.5.7 Foodservices

Little information could be found on the types of production and meal delivery systems that are in use in aged care. From the survey the production system tended to be cook-fresh with in-house control. The meal delivery system tended to centre on either bulk type, tray meals services or a mixture of both.

The results indicated that a wide variety of personnel manage foodservice with 22% with no foodservice background. The Australian Aged Care Standards provide no minimal standard into the level of skill required to run foodservices. This could translate into a major input into foodservices operations being co-ordinated by some with little or no knowledge of how the foodservice system works, with the potential for negative outcomes for the system and nutritional care. In contract Ontario long-term care standards emphasis is placed on ensuring that only skilled foodservice personal having a two year diploma in foodservice and nutrition management or a dietitian in charged (Nijs, et al, 2009).

RACH's engage dietitians as a required service. Residents are frail with complex health needs (1 productivity) and the quality of foodservices is an important consideration when residents choose a RACH (Lee, Remig, & Shanklin, 2008). The Ontario standard has a minimum time of 30 minutes per resident per month allocated as part of the funding as a minimal standard of time dietitians must be engaged in aged care

homes (Nijs, et al, 2009). The Australian Standard makes no time provision leaving this up to individual homes to engage a dietitians. And with rates of malnutrition of varying from 32-65% (Banks, et al, 2008; Wright, et al, 2010) in RACH's would indicate that aged care home would benefit from more defined engagement with dietitians. Further to this the Australian Standard down not recognise the professional development program from the Dietitian Association of Australian (Accrediting Practice Dietitians APD). Instead the standards use terms such as "nutrition expert" "appropriate specialist to review diet and menus" leaving RACH's to interpret these loosely designed standards and employ other less qualified health care professionals to undertaken menu reviews which could directly impact upon resident nutritional care. Research carried out by Lee (2008), suggest that foodservices should be managed by skilled staff (Lee, et al, 2008,) and the sector needs to identify dietitians as a professional role and not something which can be delegated to untrained personal (Obert et al, 1964).

3.5.8 Portion size

The portion size data highlighted a huge variation between what is served for food items on the general and vitamised/puree menu. Aged care residents often eat small meals and have reduced intake (Cowan, et al, 2004; Bale et al, 2007; Gaskill, et al, 2008) which would justify the smaller portion sizes. This then requires smaller portion sizes to be fortified to ensure that the portion size is adequate (Abbasi & Rudman, 1994). Some of the data return was less the 50% raising the questions that either homes did not know portion sizes or did not want to include it.

3.6 CONCLUSION

The National Menu Survey provided an overview of the foodservices environment in RACH. This overview raised some issues which require further investigation in the meal environment system, - including choice, menu integration, portion size and how menus are being constructed in terms of design and information provided. This study is not suggesting that residents are not receiving adequate meals but rather highlights that the science behind menu planning requires more investigation to determine how this process is occurring in residential aged care. The limitations of this study were that surveys often lead respondents in a way that they might answer, may not have had the information or data available, may not of known the answers, were not allowed to fill in the survey and reliance upon the staff to completely fill in all the survey form. However, limitation can also be sign posts for further investigation and study two examined in detail, the menu written information and study three the portion size data. The literature in Australia regarding RACH's foodservices is limited and this representative data meets the objective and one of the main research questions to investigate and gain insight into the foodservice environment therefore, opening up our understanding of the meal environment system. This is the first such study to report on these findings in Australia.

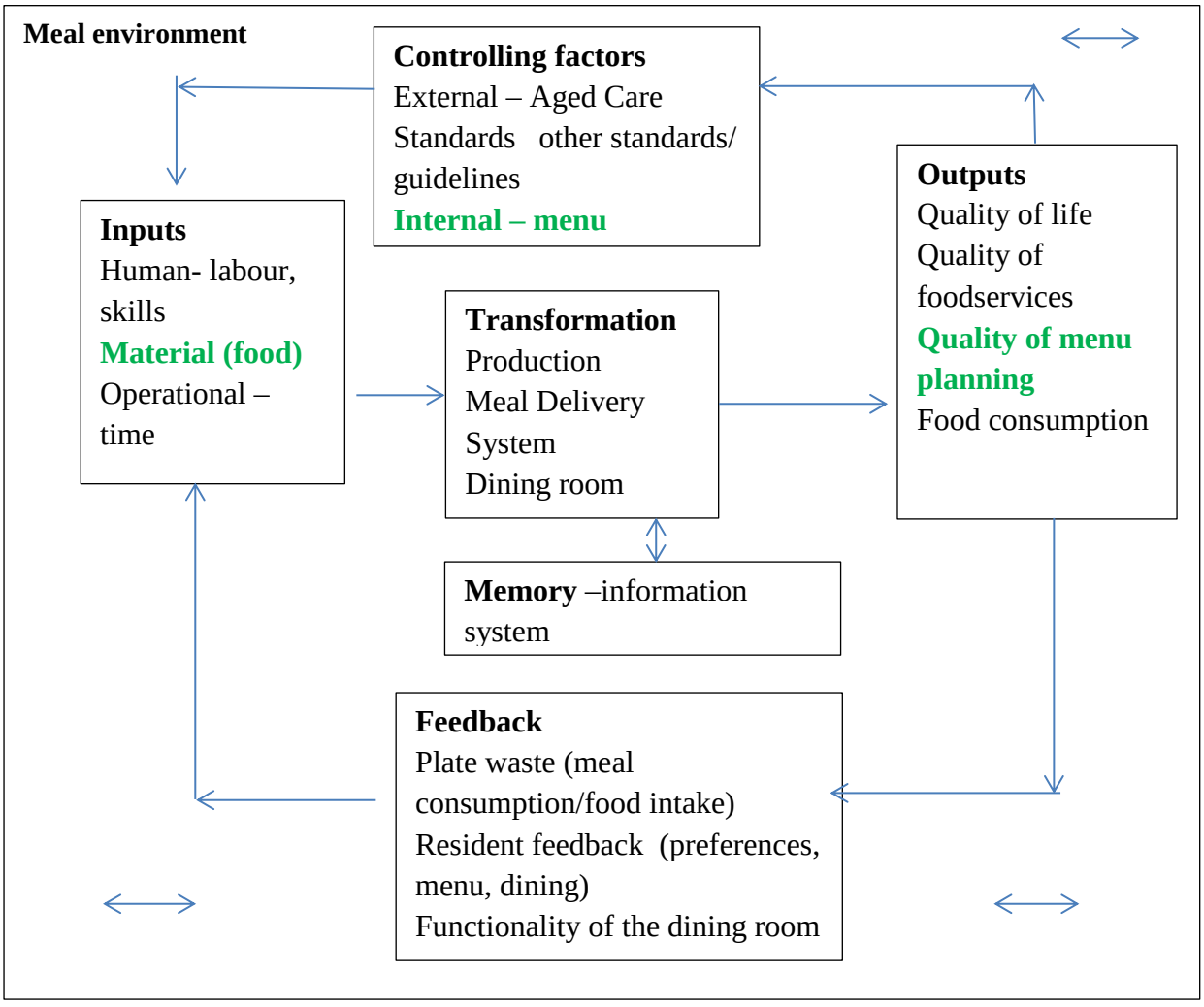
CHAPTER FOUR STUDY TWO -MENU ANALYSIS, WRITTEN INFORMATION, INTEGRATION, VARIETY, MENU CHOICE AND REPETITION

4.0 OVERVIEW

Taking menus supplied from the National Menu Survey, Study Two undertook an analysis to explore the written menu information, menu variety, and menu integration, level of choice, repetition and balance for the general menu.

This study met the objective 1.2.2 determining the quality of menu planning within aged care is quite poor with many menus lacking sufficient information.

Figure 4.1 Study two - system investigation of the menu planning process



Adapted from Vaden, 1980

4.1 DESIGN

Menus were examined in three stages. The first stage was the written menu information, integration and variety of foods. The second stage was to analyse the level of choice options available on the menu and the third stage was to examine repetition and menu balance in the general menu.

4.1.1 Demographic data

From the two hundred and seventy RACH's homes which completed the survey, only one hundred and sixty one provide a copy of their menu (59%). Demographic data collected from homes included location by state and whether metropolitan or rural, bed numbers, menu cycle and total of menu cycle in days.

4.1.2 Stage One – written information, menu integration and variety of foods

Aged care menus in Australia seem to follow a similar menu pattern design as shown by table 4.1 which was supported by the National Menu Survey data. Each menu was assessed and a count was taken of what written information was present or not present in relation to the below pattern. Menus were also assessed for integration for diets such as diabetes and texture modified. Finally, menus were assessed for the variety of foods across the menu pattern.

Table 4.1 Meal components used to assess menu quality

Menu pattern	Menu pattern component
Breakfast	Food Fluids
Morning tea	Food Fluids
Lunch	Meat Vegetables Desserts Fluids
Afternoon tea	Food Fluids
Evening meal	Soups Hot entrée Dessert Salad Sandwich Fluids
Supper	Food Fluids

Figure 4.2 outlines the equations which were used to determine written information, food variety and integration. This information was entered onto SPSS (Student version 18 Chicago IL USA).

Frequency analysis with percentages was used to determine how many facilities wrote any information regarding the menu pattern..

Figure 4.2 Equations for determining written information, integration and variety

Percentage information written on menu

Number of written menu pattern components /total number of menus x 100
113 facilities wrote breakfast items /161 x 100 = 70%
25 facilities wrote lunch fluids/161 x 100 = 16%

Menu integration

Number of menus which were written without any special dietary line (Diabetes/texture modification)

Menu variety

Total number of meal options across the menu pattern

4.1.3 Stage Two - menu choice

Choice was defined as a direct count of how many food options were available on the menu for residents to choose from within the menu pattern, eg how many lunch main meals options did the menu offer to residents? The equations for menu choice was calculated by counting choice options available at meal times across the menu pattern as shown by figure 4.3.

Figure 4.3 Equations for Menu choice

Menu Choice

Choice on the menu/total menus x 100

4.1.4 Stage Three - menu repetition and balance

Repetition can be divided into three types, i) repetition within the same week and ii) repetition on the same day between weeks (Thompson & Mayerson, 2005) iii) repetition which occurred on consecutive weeks on different days. A repetition marker of two weeks (14 days) was used to define repetition error counts. Three visual examples shown below illustrate how repetition was defined.

Menu repetition which occurs within the same week

Week/day	Monday	Tuesday	Wednesday	Thursday	Friday
Week one	Pumpkin soup	Tomato soup	Beef soup	Pumpkin soup	Pumpkin soup

Menu repetition which occurs between weeks but on the same day

Week/day	Monday	Tuesday	Wednesday	Thursday	Friday
Week one	Pumpkin soup	Tomato soup	Beef soup	Asparagus soup	Potato soup
Week two	Pumpkin soup	Vegetable soup	Chicken soup	Ham soup	Corn soup

Menu repetition which occurs between two weeks – not on the same day

Week/day	Monday	Tuesday	Wednesday	Thursday	Friday
Week one	Pumpkin soup	Tomato soup	Beef soup	Asparagus soup	Potato soup
Week two	Barley soup	Pumpkin soup	Chicken soup	Ham soup	Corn soup

Menu balance for colour and cooking method was used to examine the menus for lunch time hot meals and dessert as these two menu pattern components had the most written information provided by homes. Colour balance was determined if the same meat was used on consecutive days and the cooking balance if similar cooking methods were used eg roast. Repetition was recorded as to how many times it occurred throughout the menu as a frequency and percentage. Menu balance was calculated using frequency and percentage. The equation for this analysis is found in figure 4.4.

Figure 4.4 Equation for repetition and menu balance

Repetition within week

Total repetition within week/total number of menu days x 100

Breakfast 321/1304 x 100 = 25%

Repetition same day between weeks

Total repetition same day (different week)/total number of menu days x 100

Breakfast 551/1304 x 100 = 39%

Repetition different days between weeks.

Repetition between week (different day)/total number of menu days x 100

Breakfast 866/1304 x 100 = 66%

Menu balance (colour and cooking method)

Number of times colour balance was correct/total number of menus

Lunch meal 97/161x100 = 60%

Number of times cooking method was correct/total number of menus

Lunch meal 143/161x100 = 89%

4.2 RESULTS

Table 4.2 Demographic data for menus provided as part of the National Menu Survey

Demographic n=161	Frequency	Percentage
Menu distribution		
NSW	59	37
QLD	34	21
VIC	46	28
SA	11	7
WA	8	5
ACT	2	1
TAS	1	1
Location		
Regional	65	40
Metropolitan	96	60
Total number of beds that menus covered	12,126 (**215,000)	6% aged care
Menu cycle length		
1 week	1	1
2 weeks	4	3
3 weeks	3	2
4 weeks	135	84
5 weeks	7	4
6 weeks	11	6
Menu season		
Summer	140	87
Winter	21	13
Menu cover		
Total number of weeks	659	
Total number of day	4,620	

*N= 161 menus

**Total number of beds taken from the Productivity Commission Report 2011

4.2.1 Stage one - Menus with written information for foods and fluids

Table 4.3 represents the amount of information written on the menus. The meal which all RACH's had written information on the menu was the lunch meal (100%), followed by lunch dessert (98%) and dinner hot entrée (93%). The parts of the menu with poor written information were the mid-meal snacks for morning tea (47%), afternoon tea (38%) and supper (29%). Fluids provided by the menu had even less information with breakfast meals contained the most information (52%), the rest of the meals fell below 25%.

Table 4.3 Food and fluid information written on menus provided as part of National Menu Survey

Menu pattern n= 161	Number of menus with food written on (not written on menu)	Percentage % (% not written on menu)	Number of menus with fluids written on (not written on menu)	Percentage % (% not written on menu)
Breakfast	113 (48)	70 (30)	84 (77)	52 (48)
Hot breakfast				
Morning tea	75 (86)	47 (53)	40 (121)	25 (75)
Lunch	161	100	25 (136)	16 (84)
Lunch vegetables	127 (34)	79 (21)	-	-
Lunch Dessert	158 (3)	98 (2)	-	-
Afternoon tea	62 (99)	39 (61)	42 (119)	26 (74)
Soup	142 (19)	88 (12)	-	-
Hot entrée	150 (11)	93 (7)	26 (135)	16 (84)
Evening dessert	108 (53)	67 (33)		
Supper	46 (115)	29 (71)	41 (120)	25 (75)
Salads	82 (79)	51 (49)	-	-
Sandwiches	82 (79)	51 (49)	-	-

The value of the written information on the menu was also reduced when non-descriptive menu terminology was used. "Soup of the day" further reduced the menu information by 13% and "seasonal vegetables" accounted for 30% less information. Table 4.4 indicates that integration for special diets e.g. for diabetes was well undertaken by homes. This is positive as it indicates residents are receiving similar meals. The texture modification integration was minimal and this was due to the lack of menus which actually indicating texture modification.

Table 4.4 Menu integration for main meals for diabetic and texture modifications from menus provided as part of the National Menu Survey

Menu pattern	Menu integration (diabetic) Frequency/percentage		Menu integration (texture mode Frequency/percentage	
	On menu	Not on menu	On menu	Not on menu
Lunch meal n=161	148 (92%)	13 (8%)	20 (12%)	141 (88%)
Lunch dessert n=158	141 (88%)	20 (12%)	10 (6%)	148 (94%)
Evening meal n=150	140 (93%)	10 (6%)	17 (11%)	133 (89%)
Evening dessert n=108	108 (100%)		8 (5%)	100 (93%)

*actual number of menu written information

4.2.2 Menu pattern variety

Table 4.5 outlines the variety across the menu pattern and the most popular meals. The variety of types of meals provided across the menu pattern varied with hot entrées having the greatest variety of meals used in planning menus (276). Supper was the least varied meal with only 5 options used. The data showed that biscuits were the predominant snack used in aged care homes.

Table 4.5 Menu variety and most popular meals

Menu Pattern n=161	Number of variety of meals served	The most popular meal
Hot breakfast	40	Scrambled eggs Poached eggs Bacon and eggs Baked beans Spaghetti
Morning tea	135	Assorted biscuits (30%) Cheese and crackers Fruit cake Scones, jam and cream Pikelets
Lunch Main meal Vegetables Desserts	 259 67 275	**Main meals** - Roast (beef, chicken, lamb, pork) Baked and crumbed fish **Vegetables** - mashed potato, pumpkin, beans, peas **Dessert** - bread and butter pudding, trifle, apple crumble, pavlova, fruit salad & ice cream
Afternoon tea	98	Assorted biscuits (40%) Plain cake Cheese and crackers Scones, jam and cream
Evening meal Soup Hot entrée Dessert	 138 276 163	**Hot entrée** – scrambled eggs, pies, sausage rolls, baked beans, spaghetti **Soup** – vegetable, pumpkin, tomato, pea and ham, beef & vegetable **Dessert** – Fresh fruit, tinned fruit, yogurt, Jelly and ice cream , fruit and custard
Supper	5	Assorted biscuits (71%) Sandwiches Cakes Fruit Yogurt

4.2.3 Choice offered across the menu

Table 4.6 examines the level of choice offered to residents. For breakfast there was no alternative choice for the hot breakfast item when it was available and only 57% of RACH's offered hot breakfast once a day. Morning tea only saw 13% of RACH's offering any alternative at this meal time. For lunch, 64% of RACH's offered an alternative hot meal option. Most RACH's offered three types of vegetables (83%). For lunch desserts only 11% of homes offered an alternative choice. Afternoon tea saw only 6% of homes offering an alternative choice. There was no indication of any RACH's offering a soup alternative. Only 7% of RACH's offered a hot entrée choice, though at the evening meal residents often had a choice between hot entrée, soups, salad and sandwiches. For the evening dessert 58% of homes provided no alternative. Of the 42% of RACH's that did offer an option, fresh fruit was that option.

Table 4.6 Planned choice available on menus provided by the National Menu Survey

Menu pattern and choices offered	Frequency	Percentage
No alternative hot breakfast n=76	76	100
Number of times a week hot breakfast was offered		
Daily	43	57
Once a week	20	26
More than twice a week	13	17
Cold breakfast cereals n=113		
At least four	2	2
Four or more	39	34
Did not specify	72	64
Fruit juice		
1 choice	2	2
2 choices	23	21
3 choices	6	5
4 choices	3	3
5 choices	1	1
6 choices	1	1
Did not specify	75	67
Morning tea n=75		
One choice	65	87
Two choices	7	9
Three choices	3	4
Lunch n=161		
Alternative main	103	64
No alternative offered	58	36
Lunch vegetables n=127		
Three vegetables	105	83
Four vegetables	22	17
Dessert n=158		
Alternative offered	17	11
No alternative	141	89
Afternoon n=62		

Menu pattern and choices offered	Frequency	Percentage
One choice	58	94
Two choices	4	6
Soup n=142		
One choice	142	100
Hot entrée n=150		
Hot entree alternative	10	7
No alternative	140	93
Number of choices across all options Evening Meal combination of hot entrée, soup, salad and sandwich	16	10
1 choice	62	39
2 choice	15	9
3 choice	68	42
4 choice		
Evening dessert n=108		
Offered choice	45	42
Offered no alternative	63	58
Supper n=46	No alternative offered	

4.2.4 Repetition within menu design

Table 4.7 outlines the repetition within the menu pattern design. The most repetition found was supper (100%) with the use of biscuits being the most prominent snack served. The breakfast menu had the next highest repetition errors for within the week (25%) due to a high proportion of egg based dishes being served. The lowest repetition rates was that of the lunch meal (1%) indicating that planning for this part of the menu did not have a lot of repeated foods/meals.

The repetition errors for menu planning when foods were served on the same day on different weeks is shown in table 4.7. Breakfast also had a high repetition value of 39% thus indicating that the breakfast menu often offered foods repeated on the same day on different weeks. Morning tea repetition (21%) was due to the biscuits served on the weekend. Lunch repetition 50% that was due to dietary the custom of serving roast meals on Sunday and fish on Friday. Some homes however, did not alter the meals and at times crumbed fish was served every Friday. Repetition when food/meal items were repeated week after week showed breakfast (66%), which is to be expected due to small amount of breakfast variety. Soups have a repetition error value of 29% indicating more soups were repeated on consecutive weeks, with morning tea (30%) and afternoon tea (23%).

Table 4.7 Repetition within the menus :- within the week;, between weeks but on the same day, and between on week different days

Food component n=161	Percentage of repetition within week	Food examples most noted	Percentage of repetition between week same day	Food examples most noted	Percentage of repetition between week on different days	Food examples most noted
Hot Breakfast n=76	25%	Scrambled eggs	39%	Same type of egg dished used	66%	Egg dishes
Morning tea n=75	18%	Biscuits	21%	Biscuits	30%	Biscuits
Lunch n=161	1%		5%	Roast on Sunday Fish on Friday	8%	Two roasts served in the week
Lunch dessert n=158	1%		3%		12%	Pudding Fruit
Afternoon tea n=62	15%	Biscuits	16%	Biscuits	23%	Biscuits
Evening hot meal n=150	5%		5%		12%	Scrambled eggs Party pies
Soup n=142	3%	Vegetable soup	9%		29%	
Evening dessert n=108	6%	Fruit	7%	Fruit Jelly Desserts	17%	Fruit Ice cream Mousse
Supper n=46	100%	Biscuits	100%	Biscuits	100%	Biscuits

4.2.5 Menu balance in terms of appearance colour and cooking methods

Table 4.8 outlines two menu planning balance principles. For the general menu 60% of menus were balanced correctly for colour and 87% were balanced for cooking methods used.

Table 4.8 Balance colour and cooking method for general and vitamised/puree menu

Menu	Colour balanced (percentage)	Colour unbalanced (percentage)	Cooking method balanced (percentage)	Cooking method unbalanced (percentage)
General Main meal n=161 Desserts n=158	 97(60) 119 (75)	 64 (40) 39 (25)	 143 (89) 128 (81)	 18 (11) 30 (19)
Vitamised/puree* Main meal n=20 Dessert n=10	 15 (75) 8 (80)	 5 (15) 2 (20)	 18 (90) 9 (90)	 2 (10) 1 (10)

*the vitamised/puree menu had very little written information to enable this analysis to be undertaken

4 3 DISCUSSION

The menu forms one of the most important controlling factors of the meal environment system. Success or failure of foodservice can often be traced to the menu (Wood & Harge 1968). These results would suggest that the written information in designing a menu in residential aged care is varied across the sector.

4.3.1 Written menu

Little could be found in academic literature that discussed the written menu and information which should be utilised in menu design. The only source that did include how a menu should be written was 'Best Practice Food and Nutrition Manual for Aged Care Facilities' (Bartl and Bunney 2004) "all food and beverages offered should be written on the menu with sufficient detail to enable effective evaluation of the menus nutritional content" (p 20 Bartl and Bunney 2004). The draft version (Bartl and Bunney 2012) did not have any menu planning guidance except in the outsourcing foodservices checklist which indicated the same as above. The use of non-descriptive menu terminology as shown in photo 4.2 further reduces the level and quality of written menu information on RACH's menus.

From table 4.2 the menu written information was very inconsistent across the menu pattern and the fluid information was even less descriptive. The expected outcomes from the Australian Aged Care Standards provide no minimal requirement for the design of menus and the level of written

information required. Current tools which are used to assist planning within Australia (standards and guidelines) do not provide sufficient menu design and this will be discussed more in chapter five. As the menu is the foundation of the foodservice system these results would indicate that menu design is seriously undermined within the aged care sector. This could compromise menu variety and increase menu repetition. Poor menu planning, with little written information, leaves foodservices vulnerable to *adhoc* menu planning practices often using a list rather than a menu as shown in photo 4.1. This study indicates that across the sector, there is a significant gap between actual practice and what could be considered best practice.

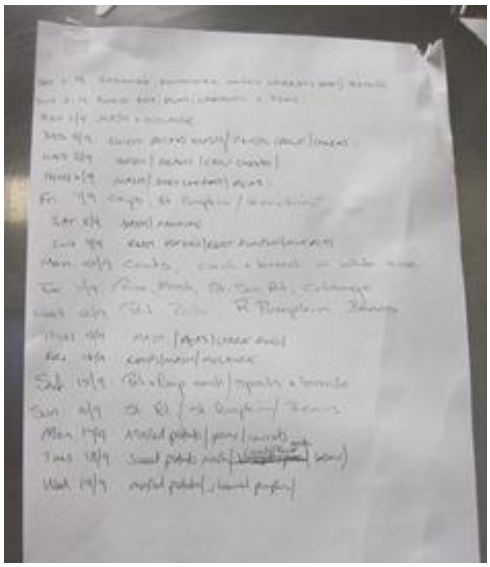
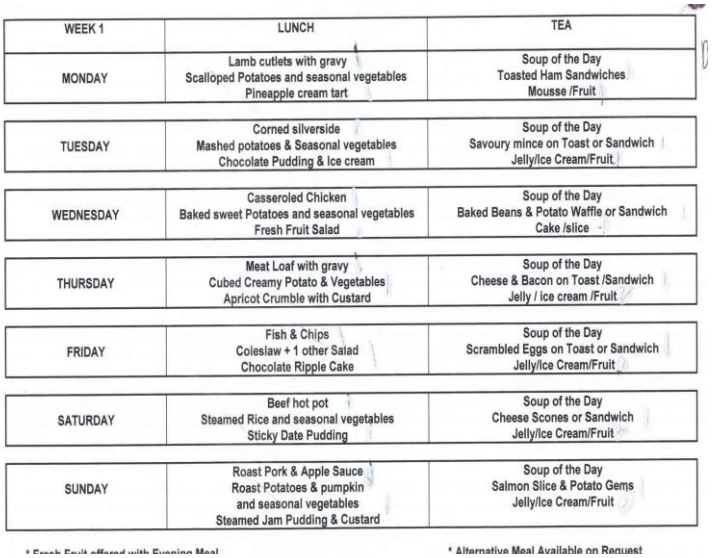


Photo 4.1 example of a list of vegetables used to plan the menu –each day the cook would write up which vegetables were for the day Meal environment 28 (NSW)

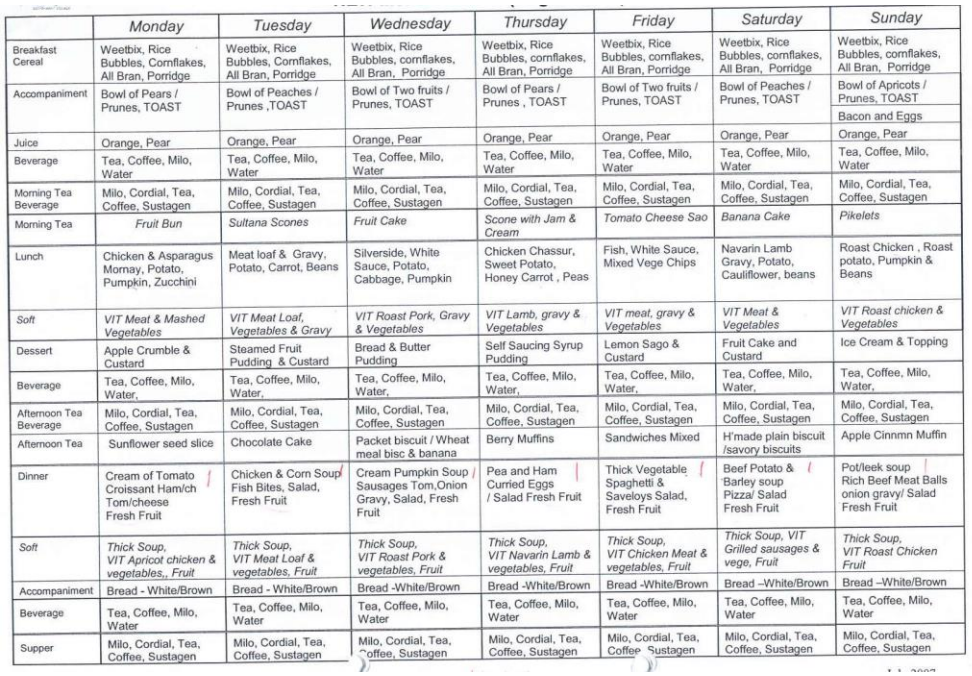


WEEK 1	LUNCH	TEA
MONDAY	Lamb cutlets with gravy Scalloped Potatoes and seasonal vegetables Pineapple cream tart	Soup of the Day Toasted Ham Sandwiches Mousse /Fruit
TUESDAY	Corned silverside Mashed potatoes & Seasonal vegetables Chocolate Pudding & Ice cream	Soup of the Day Savoury mince on Toast or Sandwich Jelly/Ice Cream/Fruit
WEDNESDAY	Casseroled Chicken Baked sweet Potatoes and seasonal vegetables Fresh Fruit Salad	Soup of the Day Baked Beans & Potato Waffle or Sandwich Cake /slice
THURSDAY	Meat Loaf with gravy Cubed Creamy Potato & Vegetables Apricot Crumble with Custard	Soup of the Day Cheese & Bacon on Toast /Sandwich Jelly / ice cream /Fruit
FRIDAY	Fish & Chips Coleslaw + 1 other Salad Chocolate Ripple Cake	Soup of the Day Scrambled Eggs on Toast or Sandwich Jelly/Ice Cream/Fruit
SATURDAY	Beef hot pot Steamed Rice and seasonal vegetables Sticky Date Pudding	Soup of the Day Cheese Scones or Sandwich Jelly/Ice Cream/Fruit
SUNDAY	Roast Pork & Apple Sauce Roast Potatoes & pumpkin and seasonal vegetables Steamed Jam Pudding & Custard	Soup of the Day Salmon Slice & Potato Gems Jelly/Ice Cream/Fruit

* Fresh Fruit offered with Evening Meal * Alternative Meal Available on Request

Photo 4.2 example of menu with lack of information and using non descriptive menu terminology – menu number 148 (VIC)

Photo 4.3 outlines a menu which has good written information for the general menu including foods and fluids across the menu pattern. It is not a good menu for integration of the texture modification residents are eating the same meal for lunch and evening meal. This raises serious issues of how this menu planning undertaken in the meal environment.



	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast Cereal	Weetbix, Rice Bubbles, Cornflakes, All Bran, Porridge	Weetbix, Rice Bubbles, Cornflakes, All Bran, Porridge	Weetbix, Rice Bubbles, cornflakes, All Bran, Porridge	Weetbix, Rice Bubbles, cornflakes, All Bran, Porridge	Weetbix, Rice Bubbles, cornflakes, All Bran, Porridge	Weetbix, Rice Bubbles, cornflakes, All Bran, Porridge	Weetbix, Rice Bubbles, cornflakes, All Bran, Porridge
Accompaniment	Bowl of Pears / Prunes, TOAST	Bowl of Peaches / Prunes ,TOAST	Bowl of Two fruits / Prunes, TOAST	Bowl of Pears / Prunes , TOAST	Bowl of Two fruits / Prunes, TOAST	Bowl of Peaches / Prunes, TOAST	Bowl of Apricots / Prunes, TOAST Bacon and Eggs
Juice	Orange, Pear	Orange, Pear	Orange, Pear	Orange, Pear	Orange, Pear	Orange, Pear	Orange, Pear
Beverage	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water
Morning Tea Beverage	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen
Morning Tea	*Fruit Bun*	*Sultana Scones*	*Fruit Cake*	*Scone with Jam & Cream*	*Tomato Cheese Sao*	*Banana Cake*	*Pikelets*
Lunch	Chicken & Asparagus Mornay, Potato, Pumpkin, Zucchini	Meat loaf & Gravy, Potato, Carrot, Beans	Silverside, White Sauce, Potato, Cabbage, Pumpkin	Chicken Chassur, Sweet Potato, Honey Carrot , Peas	Fish, White Sauce, Mixed Vege Chips	Navarin Lamb Gravy, Potato, Cauliflower, beans	Roast Chicken , Roast potato, Pumpkin & Beans
Soft	*VIT Meat & Mashed Vegetables*	*VIT Meat Loaf, Vegetables & Gravy*	*VIT Roast Pork, Gravy & Vegetables*	*VIT Lamb, gravy & Vegetables*	*VIT meat, gravy & Vegetables*	*VIT Meat & Vegetables*	*VIT Roast chicken & Vegetables*
Dessert	Apple Crumble & Custard	Steamed Fruit Pudding & Custard	Bread & Butter Pudding	Self Saucing Syrup Pudding	Lemon Sago & Custard	Fruit Cake and Custard	Ice Cream & Topping
Beverage	Tea, Coffee, Milo, Water,	Tea, Coffee, Milo, Water,	Tea, Coffee, Milo, Water,	Tea, Coffee, Milo, Water,	Tea, Coffee, Milo, Water,	Tea, Coffee, Milo, Water,	Tea, Coffee, Milo, Water,
Afternoon Tea Beverage	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen
Afternoon Tea	Sunflower seed slice	Chocolate Cake	Packet biscuit / Wheat meal bisc & banana	Berry Muffins	Sandwiches Mixed	H'made plain biscuit /savory biscuits	Apple Cinnmn Muffin
Dinner	Cream of Tomato Croissant Ham/ch Tom/cheese Fresh Fruit	Chicken & Corn Soup Fish Bites, Salad, Fresh Fruit	Cream Pumpkin Soup Sausages Tom,Onion Gravy, Salad, Fresh Fruit	Pea and Ham Curried Eggs / Salad Fresh Fruit	Thick Vegetable Spaghetti & Saveloys Salad, Fresh Fruit	Beef Potato & Barley soup Pizza/ Salad Fresh Fruit	Pot/leek soup Rich Beef Meat Balls onion gravy/ Salad Fresh Fruit
Soft	*Thick Soup, VIT Apricot chicken & vegetables,, Fruit*	*Thick Soup, VIT Meat Loaf & vegetables, Fruit*	*Thick Soup, VIT Roast Pork & vegetables, Fruit*	*Thick Soup, VIT Navarin Lamb & vegetables, Fruit*	*Thick Soup, VIT Chicken Meat & vegetables, Fruit*	*Thick Soup, VIT Grilled sausages & vege, Fruit*	*Thick Soup, VIT Roast Chicken Fruit*
Accompaniment	Bread - White/Brown	Bread - White/Brown	Bread -White/Brown	Bread -White/Brown	Bread -White/Brown	Bread –White/Brown	Bread –White/Brown
Beverage	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water	Tea, Coffee, Milo, Water
Supper	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee Sustagen	Milo, Cordial, Tea, Coffee, Sustagen	Milo, Cordial, Tea, Coffee, Sustagen

Photo 4.3 Good example of menu with written information for food and fluids. It is not a good example of planning a menu for texture modification with the same meal served

Menu 98 (QLD)

4.3.2 Menu integration

Ageing is associated with increased occurrence of chronic diseases. In aged care homes approximately 80% of residents suffer from one or more chronic diseases (Lan & Justice, 1991). Most homes from the results integrated meals for diabetes, which is positive, as research within this sector indicates that the practice of having different meals for resident in aged care homes is not necessary (Abbasi, 1994). Therapeutic diets reduce flavour and palatability, can make foods unappetising (Buckler, et al, 1994; Chiam, 2008) and can reduce the quality of foodservices provided (Cape, 2007). It has been suggested that dietary restriction increases malnutrition in the elderly population (Matthew, 1992; Carrier, et al, 2007) and is expensive to plan (Lan & Justice, 1991; Ullrich, Bauckler, Esterman & Crichton, 2014).

A large number of homes failed to indicate on their written menu how they were integrating the texture modification. This is an aspect of menu planning which requires further investigation to ascertain how this impacts upon the quality of meals being planned in aged care homes. The texture modified meal when vitamised/pureed poses a challenge to ensure quality within the menu framework but also it requires to be presented well due to the loss of shape and food structure (Cluskey, 1989; Hoteling, 1992; Keller, Chambers, Niezogoda, Duizer, 2012). The National Menu Survey highlighted an area of concern with how vitamised/puree menu planning is undertaken and considering the very small amount of written information on the menu this is unknown. Photo 4.3

highlights the clear use of left overs and poor meal variety. Photo 4.4 show an example of a vitamised/puree menu which has been integrated

WEEK ONE							
DAY/MEAL	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
BREAKFAST		Poached eggs			Scrambled egg		
					Bacon.Tomato		
LUNCH MEAT	Pickled pork	Lasagne	Roast Chicken	Beef and Bacon pie	Baked Fish	Pork Chops	Roast Lamb
SAUCE/GRAVY	Orange sauce	Garlic Bread	Gravy		Lemon sauce	Plum sce.	Mint Gravy
ACCOMPANIMENT							
VEGETABLES	Chat Potatoes	Salad	Roast Potato	Diced Potato	Mashed Potato	Fried Rice w/	Roast Potato
	Carrots		Roast Pumpkin	Corn short cut.	Mash Pump.	Broc, Cauli &	Roast Sweet Pot.
	Peas		Beans	Broccoli	Peas	Carrot	Cauli Wh. Sce.
ALTERNATE MEAT	Veal Cutlets	Chic. Schnitzel	Crumb Baked Fish	Chicken Casserole	Veg. Patties	Chicken Thighs	Roast Beef
VITAMISED MEAT	Pickled Pork	Lasagne	Roast Chicken	Beef and Bacon pie	Baked Fish	Pork	Lamb
VITAMISED VEG.	Mash Potato	Mash Potato	Mash Potato	Mash Potato	Mash Potato	Mash Potato	Mash Potato
	Vita Veg	Vita Veg	Vita Veg	Vita Veg	Vita Veg	Vita Veg	Vita Veg
MINCED MEAT	Pickled Pork	Lasagne	Roast Chicken	Beef & Bacon Pie	Baked Fish	Roast Pork	Roast Lamb
DESSERT	Baked rice and	Trifle	Fresh Fruit Salad	Sour Cream	Self Sce. Choc Pudd	Apricot Pie & Cream	Fruit Crumble &
	Fruit (HOT)		& Icecream	Apple Pie (HOT)	& Cream (HOT)	(HOT)	Icecream (HOT)
	EVENING MEAL						
SOUP	Crème of Veg.	Chicken Noodle	Beef and Veg.	Spinach	Pot. & Leek	Veg. & Barley	Pumpkin
SANDWICH	Egg	Egg	Egg	Egg	Egg	Egg	Egg
	Chicken & Mayo	Salmon	Ham	Silverside	Ham	Chicken & Mayo	Egg & Lettuce
	Cheese & Tom.	Ham & Pickles	Ham & Tomato	Tomato	Turkey & Cranb.	Cheese & Lettuce	Salmon
	Salad	Cheese & Tom.	Cheese	Cheese		Cream Cheese	Cheese & Tom.
	Peanut Butter (H/C)	Vegemite (H/C)	Jam (H/C)	Cheesymite (H/C)	Vegemite (H/C)	Peanut Butter (H/C)	Vegemite (H/C)
Salad option	Chic. Sal. C/Slaw	Salmon	Ham / Pot.	Silverside	Egg / Pasta	Chic. Sal. C/Slaw	Salmon
HOT ENTRÉE	Chicken sausages	Sausage Rolls	Savoury mince	Chicken Wings	Assorted S/w	Poached eggs	Party pies
VITAMISED MEAT	Chicken sausages	Pork	Savoury mince	Chicken	Lamb	Beef	Beef
VITAMISED VEG.	Mash Potato	Mash Potato	Mash Potato	Mash Potato	Mash Potato	Mash Potato	Mash Potato
	Vita Veg	Vita Veg	Vita Veg	Vita Veg	Vita Veg	Vita Veg	Vita Veg
MINCED MEAT	Chicken Sausages	Sausage Roll. & Gravy	Savoury mince	Chick. Tenderbites	Lamb Souvlaki	Poached eggs	Party Pies & Gravy
DESSERT	Fresh Fruit	Choc Cake, Run. Cream	Fresh Fruit	Custard & Jelly	Fresh Fruit	Flavoured Yogurt	Fresh Fruit
VIT DESSERT	Ice Cream	Cake & Custard	Mousse	Custard & Jelly	I/Cream & Topping	Flavoured Yogurt	Fruit & Custard
BREAD	Sliced Breads with Spreads (Peanut Butter, Vegemite, Jams and Honey)						

Photo 4.4 example of a menu which has vitamised/puree integration Menu number 105 (WA)

4.3.3 Menu variety

Across the menu pattern, food variety was limited by the number of menus which were analysed but did show that overall, menus were being planned with a variety of different meals and foods. A menu which has a high variety of food is associated with improved nutritional status as it provides a range of food options for residents (Ducak & Keller, 2011). The menu pattern with the highest variety included the main meals and desserts. Table 4.5 outlines a summary of the foods most popular from the menu audit. From the menu pattern the main meal was made up of meat and vegetables and a dessert (Wahlqvist, 1988).

4.3.4 Choice

Choice across menus in the aged care sector indicates that it is available at the lunch time and evening meal. The reduced written information actually made it difficult to determine the choice options from these menus. Again the menu is the primary source of information and if items are not

written on the menu there is a risk choice is compromised. Menu choice is an important controlling aspect for residents. Choice has been reported to be one of the primary reasons for improved intake (Vincent, 2008). Choice also ensures improved quality of life (Donini, et al, 2003) resident control (Falk, Bisogni & Sobal; 1996) and increased food intake (Shahar, Chee, & Chik, 2002).

In the aged care standards the choice options are not well defined. Under the expected outcome 3.9 which is devoted to choice, food is not even mentioned, nor is there any stipulation regarding choice option for menu planning. Standard 4.8 provides little guidance into the choices of foods required to be made available. However, the Canadian standards mandates that residents must be offered two choices at meal times (Ducak & Keller, 2011).

4.3.5 Repetition and balance

Table 4.7 examines the relationship between what part of the menu has the highest menu planning repetition. The smallest repetition errors were found within the week, meaning that menus often did not have repeated foods within the week, the exception is supper. The part of menu planning which had the highest repetition was foods being repeated between the weeks on different days indicating that less emphasis may be placed upon this part of menu planning.

Does repetition reduce the menu quality – making menus predictable? Repetition can negatively affect aged care residents' food intake, nutritional status and quality of life (Ducak & Keller, 2011). Table 4.7 only shows a small percentage of menus where there was repetition within the same week with more repetition between weeks on different days. Repetition is only acceptable when it is based on residents' requests (Ducak & Keller, 2011). However aged care homes must take care with planning menus (Matthews, 1995) where a reduced variety of foods can occur due to how a menu is planned.

Residents are increasingly coming into aged care homes frailer with a reduced length of stay (O'Reilly et al, 2007). As the menu is often the sole source of nutrition, homes have a responsibility to ensure that menus avoid repetition within the week and between weeks on the same day as this reduces the variety of foods and makes meals predictable. From study one some RACH's did not change their menu throughout the year therefore increasing the risk of repetition. The standard used with in Australia has no guidelines regarding how menu planning should be undertaken to avoid repetition. A reference to the Ontario standard did highlight a meal rotation standard which specified that no meal can be repeated within five days (Ducak & Keller 2011).

4.4 CONCLUSION

The menu audit revealed that written information is not consistently organised or presented on menus in RACH's. The menu is a primary control within the meal environment system and the aged care standards make no provision for a minimum standard of information which should be included on menus. The lack of written information and the variation between menu designs is both a limitation and a result in this study, and begins to provide insight into how the system can be impacted when the menu does not provide enough information to enable the meal environment system to function well. This is further examined in study four.

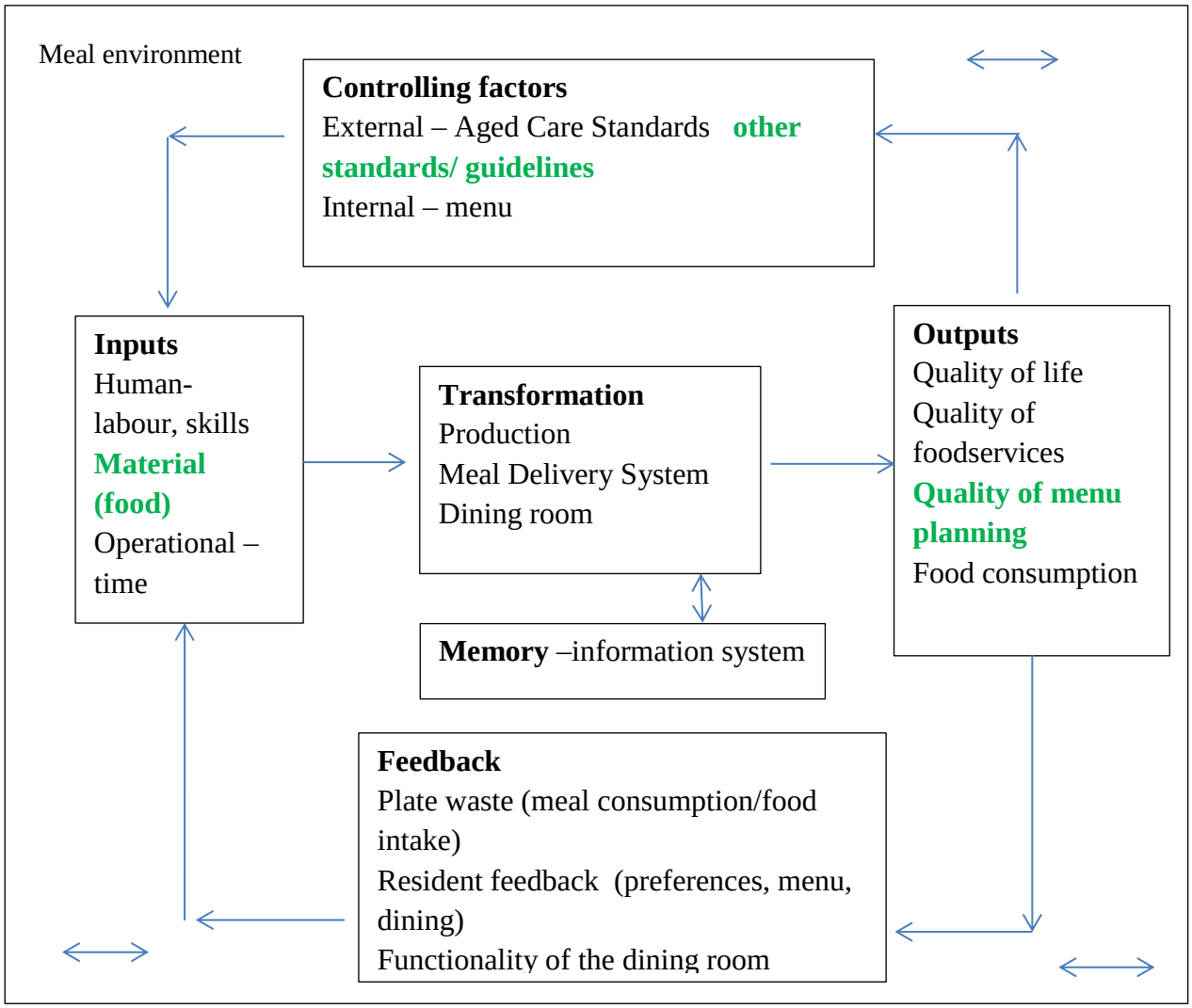
Integration of written information on the menu for special diets such as meals suitable for people with diabetes was high, indicating that general menus were being used for special diets. In contrast, the integration for texture modification was low which raises a question regarding what is being planned for residents on a vitamised/puree meal (examined in study five). The variation across all results indicates that the current structure for menu planning is not uniformly interpreted across the sector. The Aged Care Standards or supporting documentation provide no guidelines, nor do they suggest any relevant guidelines that RACH's should or could follow. Therefore RACH's are left to do their best utilising the skill level of staff and feedback of residents. The Age Care Standards are themselves an important controlling factor of the meal environment system and therefore, further undermines the planning of menus in RACH's, due to this silence.

CHAPTER FIVE STUDY THREE - MENU PLANNING STANDARDS/GUIDELINES AVAILABLE IN AUSTRALIA

5.0 OVERVIEW

Study three aims to examine the external controlling factors of menu planning utilising standards/guideline which have been produced for the aged care sector (not the federal government Aged Care Standards). An audit process was utilised through the transformational phase to measure the output of compliance and the relevance of these standard/guidelines to the menu planning process in RACH's, therefore meeting objective 1.3.2.

Figure 5.1 – Study three - system investigation of aged care standard/guidelines



Adapted from Vaden 1980

5.1 DESIGN

5.1. 1 Design overview

Five menu planning standards/guidelines were identified from an extensive literature search on the following data bases google scholar, Cinahl and Ebecso using the following search terms:

Australian menu planning standards/guidelines, menu standards/guidelines, aged care foodservice standards/guidelines, menu planning audit tools and menu check list.

All of the standards and guidelines were designed using a forum and consultative process. Two standards and three guidelines were identified as listed below

Standards
Queensland Health Nutrition Standard for Meals and Menus (Queensland Health 2011). **(Tool two)**
Nutrition Standard for menu items in Victorian Hospital and Residential Aged Care Facilities (Victorian Health 2009) **(Tool three)**

Guidelines
Food and Nutrition Manual for Aged Care Homes (Bartl & Bunney 2012) (**Tool one** is a drafted copy of the new manual currently under review)
Menu Assessment for Aged Care Facilities Checklist (Digby 2006) **(Tool four)**
Better Practice Food and Nutrition Manual for Aged Care Facilities (Bartl & Bunney 2004) **(Tool five)**

The auditing of the menus using the above five tools was undertaken in three parts

Part one – portion size audit
Part two – tool comparison – audit of the differences between the five tools
Part three – menu compliance against audit tools

5.1.2 Design part one – portion sizes

Part one undertakes a comparison between the portion sizes recommended by each tool as shown by table 5.1. Guidelines from Bartl & Bunney 2004 (Tool 5) provided no information on portion sizes and therefore were not included. The portion size data used for part one came from the National Menu Survey (Chapter 3). Two hundred and seventy four surveys were returned and of those surveys returned as much as 50% of RACH's did not fill in the portion size section of the survey. RACH's were asked to fill in portion serve sizes for general and vitamised/puree meals. RACH's provided the data for a maximum and minimum serve and for this analysis only the maximum portion size was used. Table 5.1 outlines the audit tool used for part one and also provides a reference to be able to compare the difference in portion sizes.

The portion size audit used the following criteria;

The portion size was the same value or range as the standard/guideline

The portion size was below the value or range as the standard/guideline
The portion size was above the value or range as the standard/guideline

Table 5.1 Comparison of various standards/guidelines between reported portion sizes with portion sizes

Four standards/guidelines		Bartl and Bunney 2012 Tool 1*	(QLDStd, 2011) Tool 2	(DoHS(Vic), 2009) Tool 3**	(Digby, 2006) Tool 4
Food items		**Best Practice Food and Nutrition Manual for Aged Care Facilities**	**Queensland Health Nutrition Standards for Meals and Menus**	**Nutrition standards for menu items in Vic hospitals and residential aged care facilities**	**Menu Assessment for Aged Care Facilities Checklist**
Portion sizes of food serves	Porridge	**	150-180g	180g	120g
	Cereal dry	30g	>20g	30g	-
	Meat	65g-100g	100g	90-110g	90-100g
	Vegetables White	75g	90-120g	90g	75g
	Vegetable green	75g	60-80g	*	75g
	Vegetable orange	75g	60-80g	*	
	Fruit	**	>80g	100g	75g
	Milk	**	>100ml	140ml	150g
	Fruit juice	125ml	100-120ml	100ml	125ml
	Soup	**	120-200ml	180ml	180ml
	Dessert	**	90-120g	90-120g	120g

*Victorian standard had a combined portion total for other vegetables (120-140g total weight for both vegetables) and was not used in this analysis
** Bartl and Bunney (Tool One 2012) did not provide any values for these foods

The portion values of the four tools were compared to determine the variations using grams and millilitres. The data was then analysed to determine how portion sizes for each RACH compared to each tool individually. This was done by the criteria below and data was entered onto SPSS (Student version 18 Chicago IL USA) using the following coding system

1 = Portion size provided by home was below the range as set out by the standard/guidelines
2 = Portion size provided by home was within the range set out by the standard/guidelines
3 = Portion size provided by home was above the range set out by the standard/guidelines
4 = Portion size was not indicated on the survey data

Frequency analysis was undertaken to determine the portion sizes which were within the range, below and above the range. It was also useful to determine how many menus were unable to be analysed due to portion size data not being provided. This was done for both the general and

vitamised/puree portion size data. A final comparative analysis was undertaken between the four tools to outline which tool had a greater compliance to the portion size provided by the survey data.

5.1.3 Design part two – design comparison of standards and guidelines

Part two compared the five standards/guidelines to examine the differences and similarities of design and information which the audit tools include. The tools were compared to each other for the following information and a full outline of each tool is found in table 2.3.

Portion size data (part one)
Daily food serve specifications - how many serves should be included on the menu for food items e.g. 5 serves of vegetables per day or red meat on the menu once per day.
Menu item specifications – provide guidelines on what the menu should supply for choice and design options e.g. bread for main meals is shown on the menu
Dietary specifications - provides guidelines on specific nutrients, e.g. high fibre bread and calcium rich desserts.
Dining room specifications centred on if the standard/guideline made any reference to how dining rooms should be set up to enhance meal service
Cycle menu specified how long the menu should be in written length
Menu planning which the home could follow to help write and develop their menus.
Texture modification – written on menu to show integration

The analysis of part two involved a comparison of the tools to compare the similarities and differences of each tool. Comparison was made utilising the headings as stated above

5.1.4 Design part three – measure of compliance of menus

Part three examined level of compliance of the one hundred and sixty one menus which were provided from the National Menu Survey. Tools One, Two, Three and Five were used, Tool Four, the Victorian standard was not used as it did not have any information on the criteria listed above.

Each menu was assessed to determine if it met the criteria. The criteria were measured in the following way:

1. The menu met the criteria of the standard/guideline (therefore it was compliant)
2. The menu did not meet the criteria of the standard/guidelines (therefore it was non-compliant)
3. The menu did not have any written information regarding the specification of the standard/guideline

Relevance was measured regarding which aspects of menu planning seem to be achieved. This is was limited by the amount of information supplied on menus.

Compliance definitions used to undertake audit

The following definitions were used to help determine compliance

- High calorie mid-meals had to include food items such as yogurt, fruits, snacks made on milk, eggs, biscuits with cheese and milk drinks
- Soups are substantial – measure if 50% of soups written on the menu were made with vegetable, barley, legumes, meat or cream.
- Calcium rich desserts had to have a serve with custard, yogurt or ice cream or be made from milk, custard or with high egg content
- Choice was determined as it was either on the menu or not on the menu

Coding for part three was entered onto SPSS (Student Version 18 Chicago IL USA). The following coding was used

1 = yes met the standard/guidelines specifications – compliant
2 = did not meet the standard/guidelines specifications - not compliant
3 = no written information on the menu to be able to audit the standard/guideline

Frequency analysis was undertaken to determine the level of compliance, non-compliance and how many menus were unable to be audited due to lack of written information.

A further analysis was undertaken to compare the compliance across all four tools. Compliance was calculated on daily food service specification, menu specification and dietary food serve specification. The sections for each tool was tallied and compliance was measured at 100% from the audit . Overall compliance were calculated by adding up the three areas of compliance and dividing by the number of audit parameters per tool. The areas in which the tools were compliant were listed as part of the compliance comparison. Areas of compliance which were less than 50% were listed to indicate within these tools, homes were least able to meet.

5.2 STUDY SAMPLE

The portion size data and menus used to undertake the exploration of this study was taken from the National Menu Survey and from the menus supplied for those homes as used in study two. The demographic data for the analysis of the portion size data can be found in table 3.1 and the demographic data for the analysis of the compliancy of standard/guidelines can be found in table 4.1

5.3 RESULTS

5.3.1 Part One - Portion size analysis

Table 5.2 outlines a comparison between the four tools for portion sizes and ranges. No food item had zero grams difference, indicating that all portion sizes had some level of variation between them. Therefore, there was no consistent portion size used across any of the four tools. Bread and

cereal (dry) had the smallest gram variation (10g) followed by desserts at 30g. The largest gram variation was porridge with 60g, white vegetables was 45g and soup was 60ml. Both green and orange vegetables variation was 20g. Some of the tools did not have a value for portion size as indicated by a dash (-).

Table 5.2 A comparison of recommended portion size from known standards/guidelines in foodservice in action

Four standards/guidelines		Bartl and Bunney 2012	(QLDStd, 2011)	(DoHS(Vic), 2009)	(Digby, 2006)	Variation of each portion size (g) (ml)
Food items		**Best Practice food and Nutrition Manual for Aged Care Facilities**	**Queensland Health Nutrition Standards for Meals and Menus**	**Nutrition standards for menu items in Vic hospitals and residential aged care facilities**	**Menu Assessment for Aged Care Facilities Checklist**	
Portion sizes of food items	Porridge	-	150-180g	180g	120g	60g
	Cereal dry	30g	>20g	30g	-	10g
	Meat	65g-100g	100g	90-110g	90-100g	45g
	Vegetables White	75g	90-120g	90g *	75g	45g
	Vegetables green	75g	60-80g	*	75g	20g
	Vegetables orange	75g -	60-80g		75g	20g
	Fruit	-	>80g	100g	150g	20g
	Milk	125ml	>100ml	140ml		40 ml
	Fruit juice	-	100-120ml	100ml	125ml	25ml
	Soup	-	120-200ml	180ml	180ml	60ml
	Dessert		90-120g	90-120g	120g	30g

*Victorian standard had a combined portion total for other vegetables (120-140g total weight for both vegetables) and was not used in this analysis

5.3.1.1 Portion size compliance across the four tools

Table 5.3 and 5.4 outlines the portion size data supplied, compared to the four tools as listed above for the general and vitamised/puree menu. While most homes were within or above the stated portion sizes there were some areas across the four tools where the portion size was below that of what was stated for compliance (highlighted in red). The amount of missing information from the surveys was quite high with slightly more homes filling in the general menu portion size compared to that of the vitamised/puree portion size which on average had over 50% missing information.

Table 5.3 General menu portion size compliance for all tools *

Bartl & Bunny 2012 Tool one n=274	**<range**	**Within**	**>range**	**QLD Health 2011 Tool two n= 274**	**<range**	**Within**	**>range**
Bread & cereal **30g**	75 (28%)	6 (2%)	53 (19%)	Hot cereal 150-180g	39 (14%)	63 (23%)	38 (14%)
				Ready to eat >20g	0	5 (2%)	129 (47%)
Fruit juice 125ml	64 (24%)	1 (0%)	80 (29%)	Fruit juice 120ml	5 (2%)	58 (21%)	80 (29%)
				Fruit 80g	27 (10%)	7 (3%)	107 (39%)
Meat 65-100g	5 (2%)	89 (32%)	54 (20%)	Meat 100g	28 (10%)	64 (24%)	56 (20%)
White vegetables 75g	30 (11%)	41 (15%)	75 (27%)	White vegetables 90-120g	82 (30%)	49 (18%)	17 (6%)
Green vegetables 75g	64 (23%)	44 (16%)	35 (13%)	Green vegetables 60-80g	32 (12%)	82 (30%)	29 (10%)
Orange Vegetables 75g	54 (20%)	44 (16%)	37 (14%)	Orange vegetables 60-80g	28 (10%)	79 (29%)	26 (10%)
				Desserts 90-120g	23 (8%)	76 (28%)	40 (15%)
				Soup 120-200ml	8 (3%)	92 (33%)	27 (10%)
Victorian Std 2009 Tool three n=274	**<range**	**Within**	**>range**	**Digby 2006 Tool four n=274**	**<range**	**Within**	**>range**
Porridge 180g	58 (21%)	43 (16%)	37 (13%)	Bread & cereal dry 40g	72 (26%)	6 (2%)	56 (21%)
Ready to eat cereals 20g	30 (11%)	5 (2%)	99 (36%)	Fruit juice 125ml	64 (24%)	1 (0%)	80(29%)
Fruit canned 100g	35 (13%)	16 (6%)	89 (32%)	Fruit 150g	123 (45%)	9 (3%)	8 (3%)
Fruit juice 100ml	5 (2%)	8 (3%)	132 (48%)	Meat 90-100g	20 (7%)	77 (28%)	51 (19%)
Meat 90-110g	20 (7%)	77 (28%)	51 (19%)	White vegetables 75g	52 (19%)	41 (15%)	53 (19%)
White Vegetable s 90g	80 (29%)	26 (10%)	41 (15%)	Green vegetables 75g	64 (23%)	44 (16%)	35 (13%)
				Orange vegetables 75g	54 (20%)	44 (16%)	37 (14%)
Dessert 90-120g	23 (8%)	76 (28%)	40 (15%)	Dessert 120g	79 (29%)	18 (6%)	35 (13%)
Soup 180ml	33 (12%)	16 (6%)	81 (29%)	Soup 180ml	33 (12%)	16 (6%)	81 (30%)

See table 5.2

Table 5.4 Vitamised/puree menu portion size compliance for all tools*

Bartl & Bunny 2012 Tool one n=274	**<range**	**Within**	**>range**	**Qld Health 2011 Tool two n=274**	**<range**	**Within**	**>range**
Fruit juice 125ml	75 (28%)	9 (3%)	44 (16%)	Hot cereal 150-180g	35 (13%)	57 (21%)	30 (11%)
Meat 65-100g	10 (4%)	40 (14%)	81 (30%)	Fruit juice 120ml	3 (1%)	61 (22%)	66 (24%)
Veg White 75g	33 (12%)	42 (15%)	56 (20%)	Fruit 80g	24 (9%)	6 (2%)	98 (36%)
Green vegetables 75g	57 (21%)	46 (17%)	26 (9%)	Meat 100g	33 (12%)	18 (7%)	80 (29%)
Orange vegetables 75g	56 (20%)	46 (17%)	28 (10%)	White vegetables 90-120g	80 (29%)	40 (15%)	9 (3%)
				Green vegetables 60-80g	29 (11%)	80 (29%)	19 (7%)
				Orange vegetables 60-80g	28 (10%)	81 (30%)	21 (8%)
				Desserts 90-120g	16 (6%)	77 (28%)	34 (12%)
				Soup 120-20ml	5 (2%)	98 (36%)	26 (9%)
Victorian 2009 Tool three n=274	**<range**	**Within**	**>range**	**Digby 2006 Tool four n=274**	**<range**	**Within**	**>range**
Porridge 180g	56 (20%)	40 (15%)	32 (12%)	Fruit juice 125ml	75 (28%)	9 (3%)	44 (16%)
Fruit canned 100g	31 (11%)	16 (6%)	79 (29%)	Fruit 150g	111 (40%)	7 (3%)	8 (3%)
Fruit juice 100ml	3 (1%)	10 (4%)	117 (43%)	Meat 90-100g	25 (9%)	69 (25%)	37 (14%)
Meat 90-110g	25 (9%)	69 (25%)	37 (14%)	White vegetables 75g	33 (12%)	42 (15%)	56 (21%)
Vegetables white 90g	80 (29%)	24 (9%)	25 (9%)	Green vegetables 75g	57 (21%)	46 (17%)	26 (9%)
				Orange vegetables 75g	56 (20%)	46 (17%)	28 (10%)
Dessert 90-120g	16 (6%)	77 (28%)	35 (13%)	Dessert 120g	73 (27%)	20 (7%)	35 (13%)
Soup 180ml	25 (9%)	14 (5%)	90 (33%)	Soup 180ml	25 (9%)	14 (5%)	90 (33%)

* See table 5.2

5.3.1.2 Portion size range values, tool relevance

Table 5.5 outlines the portion size values which are most representative within aged care foodservices (in bold). The values are the same for both general and vitamised/puree portion sizes. As the data shows no one tool had complete compliance. The tool which had the highest compliance was the Queensland Standard (Tool 2) due to providing its portion size data as a range. The last column highlights the portion size values which are used by aged care homes and shows, a great variation across the sector.

Table 5.5Portion size with the most compliance to standards and guidelines

Tool	Bartl and Bunney 2012	(QLDStd, 2011)	(DoHS(Vic), 2009)	(Digby, 2006)	Range of portion size values provided by all survey data
	Best Practice food and Nutrition Manual for Aged Care Facilities	**Queensland Health Nutrition Standards for Meals and Menus**	**Nutrition standards for menu items in Vic hospitals and residential aged care facilities**	**Menu Assessment for Aged Care Facilities Checklist**	
Cereal dry	30g	**20g**	**20g**	40g	20-250
Porridge		**150-180g**	180g		55-350
Fruit juice	125 ml	**100-120ml**	**100ml**	125 ml	60-300
Fruit		**80g**	100g	150g	28-250
Meat	**65-100g**	100g	90-110g	90-100g	40-250
Veg White	**75g**	90-120g	90g	**75g**	20–250
Green vegetables	75g	**60-80g**		75g	25-125
Orange vegetable	75g	**60-80g**		75g	18-125
Dessert	*	**90-120g**	**90-120g**	120g	30-250
Soup	*	**120-200ml**	**180ml**	**180m**l	40-310
Hot cereal		**150-180g**	180g		20-250
Fruit juice	125 ml	**100-200ml**	**100ml**	125ml	60-300
Fruit		**80g**	100g	150g	30-240
Meat	**65-10g**	100g	90-110g	90-100g	25-200
Veg White	**75g**	90-120g	90-100g	**75g**	20-200
Green vegetable	75g	**60-80g**		75g	20-200
Orange vegetable	75g	**60-80g**		75g	20-200
Dessert	*	**90-120g**	**90-120g**	120g	30-250
Soup	*	**120-200ml**	**180ml**	**180ml**	40-310

*no data supplied ** bold indicates compliance

5.3.1.3 Comparison between general and vitamised/puree portion with known standards and guidelines

Table 5.6 outlines the mean differences between the general and vitamised/puree portions. When compared to standards/guidelines, portion ranges data used by RACH's was within range for most foods.

Table 5.6 Comparison between general portions and vitamised/puree food portions with compared standards and guidelines *

Food item	General portion size mean	Vitamised/puree portion size mean	Outcome	Portion range figure from standard/guidelines
Porridge (g)	158	158	No difference	150-180g [23]
Tinned fruit (g)	107.5	107.5	No difference	80-150g [234]
Juice (ml)	175	175	No difference	100-125ml [1234]
Meat (g)	122.5	93.7	>28.8 g	65-110g [1234]
Wet Meat (g)	139	132.5	>6.5g	No standard
Mashed potato (g)	115	100	>15g	75-120g [1234]
Orange vegetable	66	77.5	<11.5g	60-75g [1234]
Green vegetable	66	77.5	<11.5g	60-75g [1234]
Dessert (g)	127.5	121.5	>6g	90-120g [234]
Soup (ml)	172	172	No difference	120-200ml [234]

*see table 5.2
Bartl & Bunney 2012 – Best Practice Food and Nutrition Manual for Aged Care Facilities
QLD Std 2011 – Queensland Health Nutrition Standards for Meals and Menus
DOHS Vic 2009 Nutrition standards for menu items in Victorian hospitals and residential aged care facilities
Digby 2006 Menu Assessment for Aged Care Facilities Checklist

5.3.2 Part two - Analysis of the audit tools

The audit tools were very different. Each had different food components and each tool had a different way of classifying food items as shown by table 5.7. Only Tool One, Four and Five were specified for aged care homes and tool one and five were by the same authors. The Queensland and Victorian tools were designed for hospitals and aged care. The Victorian tool did not provide any other factors within its standard which could be used to audit menu design. Only Tool One and Five made any reference to dining room guidelines. Only Tool Two had a reference indicating cycle

length and tool one and five made reference to the menu cycle. All tools had some statement on texture modification.

Table 5.7 Inclusion of constructs in current standards and guidelines (tools) available in Australia*

Audit tool	Bartl & Bunney 2012 Aged care specific	QLD Std 2011 Aged care and hospital	DoHS (Vic) 2009 Aged care and hospital	Digby 2006 Aged care specific	Bartl & Bunney 2004 Aged care specific
Portion sizes of food items	Yes Not completed	Yes	Yes Vegetable serves together	Yes	No
Daily food serve specifications	Yes	Yes	No	Yes	Yes
Menu item specification	Yes	No	No	Yes	Yes
Dietary food specifications	Calcium Low calcium High fibre bread	High fibre bread	No statement	No statement	High fibre bread High fibre cereal
Dining room parameters	Meal time Meal time duration Staffing at meal time Eating environment Meal service Dining ambience	No statement	No statement	No statement	Meal time Meal time duration Staffing at meal time Eating environment Meal service Dining ambience
Cycle menu/rotation	No cycle length or rotation	14 days	No cycle length	No cycle length	Menu cycle long enough to avoid monotony
Menu planning or guidelines for design	Finger foods	Residents and family have input into the menu Facility accommodate cultural and religious preferences Menu reviewed biennially	No statements	Variety of foods	Menu choice Menu r/v Menu balance Cultural Written menu – list all foods on menu
Texture modification	Texture modification	Diet and textures	No statement	Texture modification	Texture modification

There are no compulsory standard. Those above are what are available in the industry

5.3.3 Part three - Compliance of menus against audit tools

5.3.3.1 Compliance of menu against Tool Number One

Table 5.8 outlines how compliant the menus were against these guidelines. From the daily food serve specifications, 30% of homes provided a hot cereal with 3 other dry cereals. Residents being provided with a hot main meal and hot evening meal were 100% compliant. From the menu item specifications, 51% of homes were able to provide a protein option as part of the hot breakfast choice. Milk drinks offered at main meals had only 9% compliance, and a dessert which was lower in calcium was to have an additional calcium source such as custard/ice cream was also a menu factor which was low with only 10% of homes being able to demonstrate this. The residents able to have a dessert with the main meal had 99% compliance while a dessert served with the evening meal had 58% compliance . For residents to be able to choose from either a hot meal, soup, salad and sandwich, only 43% of homes provided all four of these options to residents. Soups were supposed to provide a substantial base and only 47% of menus were compliant with this.

*Tool three was not used as it did not contain any menu/dietary specifications.

Table 5.8 Compliance of provided menus with guidelines "tool one" (Bartl & Bunney 2012)

Menu audit n=161	**Components**	**Guidelines state**	**Yes the menu was compliant (%)**	**No the menu was not compliant (%)**	**No written information on menu (%)**	**Menu audit**	**Components**	**Guidelines states**	**Yes the menu was compliant (%)**	**No the menu was not compliant (%)**	**No written information on menu (%)**
Daily food item specification	Residents have at least two hot choices at the main meal	2 hot choices	67 (42)	94 (58)		Menu item specifications	Hot breakfast choice includes protein sources (eggs bacon, mince, cheese, baked beans)	Protein choice	82 (51%)	30 (19)	49 (31)
	Each hot main meal choice provides 1 serve of meat, chicken, fish or eggs	1 serve of meat	161 (100)								
	Red meat is included on the menu at least once a day	1/day	63 (39)	98 (61)			If only continental breakfast is served, a protein source such as yogurt, cheese, or peanut butter is offered	Protein source	15 (9)	97 (60)	49 (30)
	The hot light meal choice provides 1 serve meat, chicken, fish or eggs	1 serve	161 (100)								
	Salad includes 1 serve of protein as meat chicken, fish or egg s 1/day	1 serve protein	50 (31)	32(20)	79 (49)		Bread at main meals is shown on menu	Y/N	14 (9)		147 (91)
	Sandwiches include a serve of protein meat, chicken, fish, eggs or baked beans	1 serve	24 (15)	89 (55)	48 (30)		Milk drinks are offered with all main meals and mid-meals	Y/N	15 (9)		146 (91)
	High calorie mid-meals are always offered		30 (19)	131 (81)			If a dessert is low in calcium (125ml or custard, ice cream or yogurt is added)	Y/N	16 (10)		145 (90)
	Menu provides four serves of bread, cereal, rice or pasta per day	4 serves	103 (64)	58 (36)			A dessert is served with the main meal	Y/N	157 (98)		4(2)
	The menu provides 4 serves vegetable per	4 serves vegetables	66 (41)	95 (59)							

Menu audit n=161	Components	Guidelines state	Yes the menu was compliant (%)	No the menu was not compliant (%)	No written information on menu (%)	Menu audit	Components	Guidelines states	Yes the menu was compliant (%)	No the menu was not compliant (%)	No written information on menu (%)
	day Salad = one Vegetable soup = one (three other vegetables on the menu menu)						A dessert is served with the light meal	Y/N	108 (67)	53 (33)	
	Menu provide 2 serves of fruit per day	2 serves fruit	69 (43)	92 (57)			Resident can choose more than one of Hot meal, soup, salad, sandwich	Y/N	69 (43)	92 (57)	
	1 serve of 100% fruit juice is provided	1 serve	89 (55)	72 (45)							
	Menus offer at least four serves of dairy foods such as milk, custard, yoghurt and cheese daily	4 serves dairy	37 (23)	124 (77)			Soups are substantial, thick creamy soups, vegetable that contain barley, legumes or meat	Y/N 50%	75 (46)	67 (42)	19 (12)
							Salad as a main meal include a serve of meat, chicken, fish or eggs	Y/N	8 (5)		153 (95)
Dietary item food checklist	High fibre breads (multigrain, wholemeal or white high fibre are offered)	Y/N	49 (30)	112 (70)							
	High fibre breakfast cereal included at breakfast time	Y/N	59 (37)	102 (63)							
	Calcium rich milk based desserts are offered twice a day	Y/N	14 (9)	147 (92)							

(%) are represented by the brackets

5.3.3.2 Compliance of menus against Tool Number Two

The results for audit Tool number Two is shown in table 5.9. All RACH's provided a hot protein option for lunch but only 42% were compliant by providing an alternative meal at lunch time. All homes were compliant with the offering of a daily desert. The offering of two pieces of fruit saw only 43% of homes being compliant. Again it was difficult to determine the actual foods used for the mid-meal snacks due to the way information was communicated on the menu. For the menu cycle of at least 2 week in length only one menu had a cycle length less than two weeks.

Table 5.9 Compliance of provided menus with Standard "tool two" (QLD Std 2011)

Audit Qld Health Standard n-161	Component	Standards states	Yes (%)	No (%)	No information written on menu (%)
Daily food item specifications	Cold cereal low fibre	2/day	49 (30)	112 (70)	
	Cold cereal high fibre	2/day	49 (30)	112 (70)	
	Hot cereal	1/day	88 (55)	73 (45)	
	Cold protein	1/day	28 (17)	133 (83)	
	Hot protein	1/alternate day	53 (33)	108 (67)	
	Fresh fruit	1/day	59 (37)	102 (63)	
	Tinned/fruit/juice	2/day	67 (42)	94 (58)	
	Soup high protein	1/day	75 (47)	67 (42)	19 (11)
	Hot protein	1/day	161 (100)		
	Alternative (hot protein)	1/day	67 (42)	94 (58)	
	White vegetable				
	Orange veg	1/day	88 (55)	39 (24)	34 (21)
	Green veg	1/day	63 (39)	64 (40)	34 (21)
	Desserts	1/day	89 (55)	38 (24)	34 (21)
	Fresh fruit	1/day	161 (100)		
	Snacks – high protein	2/day	69 (43)	92 (57)	
	Supplement	1/day	30 (19)	131 (81)	
		1/day	5 (3)		156 (97)
Dietary food specifications	Breakfast roll/toast low fibre	2/day	49 (30)	112 (70)	
	Breakfast roll/toast high fibre	2/day			
	Roll or bread low fibre				
	Roll or bread high fibre				
		1/day	49 (30)	112 (70)	
		1/day			
Menu cycle	Residents in aged care homes shall receive a menu with a cycle of no less than 14 days	1 week	1	1	
		2 week	4	2	
		3 week	3	2	
		4 week	135	84	
		5 weeks	7	4	
		6 weeks	11	7	

5.3.3.3 Compliance of menus against Tool Number Four

Table 5.10 outlines compliance with Tool number Four. This tool was set up differently and focused on measures of food groups which homes had to aim for with their menu planning. There was 100% compliance with providing beef/lamb four times a week, fish once per week and chicken once per week. Only 63% of homes provided pork once per week and no homes provided veal once per week. Only 41% of homes provide 5 vegetables per day, with only 55% of homes providing one green vegetable and 39% providing one orange vegetable. Homes provided 4 cereals per day. Only 46% of homes complied with providing a hardy soup with plenty of vegetables and protein. A a milk drink offered at meal times was only 9% compliant.

Table 5.10 Compliance of provided menus with guideline "tool four" (Digby 2006)

Menu audit Victorian Standard n-161	Components	Standard states	Yes (%)	No (%)	No information written on menu (%)
Daily food item specifications	Beef/lamb	4/week	161 (100)		
	Fish	1/week	161 (100)		
	Chicken	1/week	161 (100)		
	Pork	1/week	102 (63)	59 (37)	
	Veal	1/week		161 (100)	
	Vegetable/salads	5/day	66 (41)	95 (59)	
	Green vegetable	1/day	89 (55)	38 (24)	34 (21)
	Orange vegetable	1/day	63 (39)	64 (40)	34 (21)
	Cereal foods	4/day	103 (64)	58 (36)	
	Fruit	2/day	69 (43)	92 (57)	
	Dairy foods	3/day	69 (43)	92 (57)	
Menu specifications	Healthy snacks are planned and included on the menu (fruit/bread/dairy based)daily	Y/N	30 (19)	131 (81)	
	Mainly milk and or fruit based desserts on the menu	Y/N	161 (100)		
	Soups contain plenty of vegetables, a protein source and served with bread or have pasta in them	Y/N >50%	75 (47)	67 (42)	19 (12)
	Salads contain a protein source	Y/N >50%	50 (31)	32 (20)	79 (49)
	Sandwich contain protein filling and salad	Y/N >50% y/n	24 (15)	58 (36)	79 (49)
	Milk is offered at mealtimes		15 (9)	146 (91)	

5.3.3.4 Compliance of menu against Tool Number Five

Table 5.11 outlines Tool number Five Bartl 2004. Beef/lamb 4 serves per week and chicken/fish/pork/veal two serves per week were both 100% compliant. Five serves of vegetables per day including salad options was only 41% compliant. Providing 3 serves of dairy foods per day 43%.

Table 5.11 Compliance of provided menus with guideline "tool five" (Bartl & Bunney 2004)

Menu audit Bartl Bunny 2004 n=161	Components	Guidelines states	Yes (%)	No (%)	No information written on the menu (%)
Daily food serve specifications	Beef/lamb	4/week	161 (100)		
	Chicken/Fish/Pork/Veal	2/week	161 (100)		
	Vegetable/salads	5/day	66 (41)	95 (59)	
	Cereal foods	4/day	103 (64)	58 (36)	
	Fruit	2/day	69	92 (57)	
	Dairy foods	3/day	69	92 (57)	
Menu specifications	Healthy snacks are planned and include on the menu (fruit/bread/dairy based)daily	Y/N	30 (19)	131 (81)	
	Soups contain plenty of vegetables, a protein source and served with bread or have pasta in them	Y/N >50%	75 (46)	67 (42)	19 (12)
	Salads contain a protein source	Y/N >50%	50 (31)	32 (20)	79 (49)
	Sandwich contain protein filling and salad	Y/N >50%	24 (15)	58 (36)	79 (49)
	Milk is offered at mealtimes	Y/N >50%	15 (9)	146 (91)	
	Bread is offered with soups and salads	Y/N	0	0	161 (100)
Dietary food specifications	High fibre breads varieties (e.g. multigrain, wholemeal, white high fibre are offered	Y/N	49 (30)	112 (70)	
	High fibre breakfast cereals are offered e.g. rolled oats, all bran and weetbix	Y/N	59 (37)	101 (63)	

5.3.3.5 Summary of compliance

Table 5.12 outlines the overall summery of where within these tools the menus were most compliant. Compliance is measured when all menus (161) meet the tools specifications. The tool with the highest compliance (24%) was Number Four (Digby) with four statements having 100% compliance. The compliance of these tools was affected by the written information on the menus used.

Table 5.12 Summary of compliance of menus provided across all standards/guidelines (tools)

Tools	Bartl & Bunney 2012 (Tool One) Aged care specific Number of statements within tool (%)	QLD Std 2011 (Tool Two) Aged care and hospital Number of statements within tool (%)	Digby 2006 (Tool Four) Aged care specific Number of statements within tool (%)	Bartl & Bunney 2004 Aged care specific (Tool Three)
Daily food serve specifications	13	16	11	6
Daily food service specifications compliance (100%)	(2 food serve statements) 15%	(1 food serve statement) 6%	(3 food serve statements) 27%	(3 food serve statements) 50%
Statements from tools	Each hot main meal choice provides 1 serve of meat, chicken, fish or eggs The hot light meal choice provides 1 serve meat, chicken, fish or eggs.	Hot protein	Beef/lamb 4 times a week Fish once per week Chicken served once per week	Chicken/fish/pork/veal served 2 times per week Four cereal foods served a day Dairy foods are served 3 times per day
Menu specifications	10	0	6	6
Menu specifications compliance	0%	0%	(1 menu checklist statement) 17%	0%
Dietary food serve checklist	3	4	0	2
Dietary food serve checklist compliance	0%	0%	0%	0%
Overall tool compliance	**7% n=26**	**5% n-= 21**	**24% n=17**	**14% N=14**
Areas of poor compliance >50%	If a continental breakfast is served, a protein source such as yogurt, cheese or peanut butter is offered Bread at main meals is shown on menus Milk drinks are offered with all main meals and mid-meals If dessert is low in calcium (125ml of custard, ice cream or yogurt is added) Calcium rich milk based desserts are offered twice a day	Breakfast rolls/toast low and high in fibre Fresh fruit Snacks are high in protein Hot alternative protein	Milk is offered at mealtimes Veal offered once a week Fresh fruit Dairy foods Healthy snacks	Bread is offered with soup and salad Fruit Healthy snacks are planned and include on the menu (fruit, bread,/dairy based)daily High fibre breads High fibre cereals are offered

5.4 DISCUSSION

5.4.1 Standards and guidelines purpose

The purpose as stated by these standards and guidelines are as follows

Tool one – "to plan menus that will meet residents' basic food and nutrition requirements" page 25

Tool two – 'to provide a framework to assist menu planning in hospital, residential care" page 7

Tool three – "The Standards can contribute to the menu planning process undertaken by food service and dietetic professional, providing a common language for assessing nutritional objectives and establishing menu patterns" page 3

Tool four – nothing stated

Tool five- "the contents of this manual have been designed to assist and support aged care facilities in their effort to address the food, nutrition and dietary issue relevant to their residents" page VI

It is important to understand that each of these standards/guidelines have been written to support the development of menu planning in the aged care sector. As outlined in the literature review the aged care population is complex and therefore it is difficult to apply standards modelled for the acute sector Queensland and the Victorian Standards and expect them to cover the requirements of the aged care sector. This is due to organisational objectives and customers are different (Gregoire, 2013) and the length of stay is shorter in the acute sector compared to the aged care sector (Matthews, 1985).

5.4.2 National Aged Care Standards

The expected outcome under standard 2.10 and 4.8, Modules 7 and the Results and Process Guide do not specify the use of or make reference to any of these standard/guidelines. The only statement pertaining to guidelines is found under standard 4.8 and relates to menu rotation.

"menu rotation to ensure variety in accordance with relevant guidelines"

The Aged Care Standards underpins the controlling factor of the meal environment system. The Queensland and Victorian Standards apply only to RACH's linked to the acute government sector accounting which is 6% of homes (Productivity Commission Report 2011). The results show that very few menus were compliant with the Queensland Menu Planning Standards. A limitation here is that it was difficult to ascertain if menus from Queensland were from government aged care homes due to menu individually identified. The Victorian Menu planning standards is a tool which dictates the portion sizes far more relevant to larger cook-chill facilities and to the food manufacturing industry (Williams, 2012). But overall the compliance was low with the Digby Menu Check list

(Tool four) having the greatest compliance, a tool which was largely referenced off the Bartl and Bunney 2004 tool.

The current situation in Australia is as follows:

1. To date there are no national menu planning standards/guidelines written for the aged care sector

2. Work undertaken by the DAA in 2012 found that there were five potential elements to be included in any standards pertaining to menu planning (these points were only obtained by a sample of 34 people – government, dietitian, service providers and advocacy groups)

a. Minimum core food choices to be offered per day
b. Advice about dining room environments
c. Sample menus
d. Information on therapeutic diets
e. Recommended portion sizes

The sample menus element was seen as one way of introducing concepts such as information about meal patterns, suitable mid-meals and popular dishes. The dining room environment was to maximise food consumption which is an important part of the meal environment system. The 2012 draft does provide information regarding ambiance and eating assistance. The recommendation from this report was to review the 2012 Bartl & Bunney draft Best Practice Guidelines for Menus and Nutrition Care in Resident Aged Care Facilities. The review, at the time of finishing this thesis, was still underway with a date unknown (Williams, 2012)

3. The tool by Bartl and Bunney 2012 is the revised version of the 2006 tool and in its current draft format has only included information regarding menu planning in its external caters check list.

The objective of this study was to investigate the compliance of these standards/guidelines against aged care written menus to see how relevant there were. The way this was undertaken does have some limitations and the amount of information which was not written on the menu made it difficult to audit these tools. As shown by table 5.12, areas of poor compliance were due to the lack of written information. This adds weight to the conclusion that menu design in this country requires some consistency in terms of what is written on the paper menu as a minimum to provide adequate information for menu auditing. These tools may hold some relevance but from this study any relevance was undermined by the written menu.

5.4.3 Outcomes of these standards and guidelines for informing menu planning practice

The main reason for the design of a paper or electronic base menu is to act as a communication tool for the production system, review of nutritional adequacy and provide information to residents (Gregoire, 2013). These tools have been designed to assist with the development of menus and to enable a review process to be of residents' needs are met.

5.4 3.1 Portion size

Portion size underpins menu planning by ensuring that enough food and fluids are being provided (Khan, 1999). From the information gathered by this study a clear picture has emerged, indicating that the portion sizes as outlined by these tools and used by homes to plan meals are inconsistent. The range of portion sizes used for meal planning varied greatly. Table 5.5 outlines the range of portion sizes with the lowest meat serve of 40g on the general menu and even smaller (25g- 1 tablespoon) for the vitamised/puree menu and the desert portion size for both general and vitamised/puree menu being 30g. While it is recognised that aged residents often eat meals with smaller portion sizes (Carrier, et al, 2007), without proper nutritional supports such as food fortification, residents receiving such small amounts could be at risk of malnutrition. Lorefalt et al, found that by providing small energy and protein enriched meals, energy intake increased by 37% (Dunn, 2007). It is unknown if small portion size are fortified and this will be examined in study four.

The amount of information which was not provided by RACH's may indicate that portion sizes are not well known or used. This is a very interesting aspect to think about and could suggest that RACH's would benefit from a portion size structure. There is clear evidence from this study that any portion size structure should include the use of range values. But some consideration should also be given to how small portion sizes are used in meal planning and accompanied with food fortification to ensure nutritional adequacy. If portion control is not used by a home, consideration would have to be given as to how setting up standard portion sizes as stated by the DAA 2012 report could be implemented and monitored.

5.4.3.2 Daily food served specification

This area of the tools did have the highest compliance and showed that in the menu planning process RACH's were providing a certain number of meat serves, protein at both the lunch and evening meal and a dessert once per day. Again the lack of written information on the menu reduced the ability to determine how RACH's would address these specifications and led to some areas of poor compliance. Some of the areas of poor compliance existed when the specification statements centered on choice, e.g. the alternative hot option for the lunch meal indicating that choice was not available. In contract the Ontario standard sets a minimum standard for menu choice. From the 2012 report it was noted that standardising choice across the menu pattern would need consideration for the practicality and financial implications for smaller RACH (Williams, 2012). Choice was also not consistent across the tools used in this study. There are no supporting statements from the Aged Care Standards to set a minimal standard of choice and Standard 3.9

relating to choice has no menu/food statements supporting food choice options for residents. Therefore, choice for residents is not well defined and difficult to ascertain due to the lack of written information.

5.4.3.3 Menu item specification

The same theme surrounding the lack of written information on the menu again made it difficult to assess these tools. Milk being offered at mealtimes again provides an example of the lack of written information for outlining fluids on the menu. This is supported by the finding in study two where fluids served during the day was unable to be determined by the menus supplied.

5.4.3.4 Dietary food specification

Very few tools actually stated dietary food specification and those that did, the compliance was quite poor. Again this was due to the poor information written on menus. The types of statements made by these tools are at the discretion of the RACH's to follow. How meaningful these types of statements are is a very important question to ask. The use of desserts and provision of milk based drinks is an important aspect which some of these tools have incorporated. This is important as dairy foods offer a good source of calcium and protein (Khan, 1998). We know from the literature that desserts are one of the most popular parts of RACH's menu (Lirette, Podovennifoff, Wismer, Tondu & Klatt, 2007). These tools are incorporating best practice from the literature, but how that transcends into practice is one of the challenges for homes to manage when the nature of standards underpinning the system are outcome focused and open to interpretation.

5.4.3.5 Dining room guidelines

This part of the tool was untested as the data here needs to be observed in practice and will be further investigated in study four. However, as pointed out by the DAA report 2012 it is one of the areas which need to be incorporated to ensure adequate food and fluid intake by residents.

5.4.3.6 Menu cycle

The Queensland standard had a minimum of two weeks menu cycle. There was some evidence from the National Menu Survey, though small, that some aged care homes did indeed have a shorter menu cycle. Shorter menu cycles can be used, however, this does require additional choice to be provided and as seen by study two and further supported by this study that choice is limited and again unable to be truly determined due to the lack of written information on menus. Tool four (Digby 2004) specified that menus need to be long enough to avoid monotony. What does this mean and how would a home interpret this? Study two showed that repetition was high, especially between weeks but not on the same day. What standards/guidelines are available and how do

RACH interpret the amount of inconsistent information which is currently in this sector? The Aged Care Standards as shown by this study provide no support for homes to follow.

5.4.2.6 Menu planning guidelines

Tool five by Bartl and Bunny is about to be superseded by Tool one of the same authors (still in press) and if the draft document is anything to go by the menu planning process is further undermined by lack of any guidelines being written as to how the menu should be planned. The main point in this discussion is that for any standard/guideline to be useful in terms of information practice to undertake a written audit of the menu, the information needs to be on the menu to start with. Statements such as "soup of the day" "vegetables in season" "texture modified meal" are not helpful and provide no information to the production system or to residents who may be reading the menu. These types of practices undermine menu planning and evaluation as shown by photo 5.1.

Lunch	Monday 11.02.2013	Tuesday 12.02.2013	Wednesday 13.02.2013	Thursday 14.02.2013	Friday 15.02.2013	Saturday 16.02.2013	Sunday 17.02.2013
Main Course 1	Lemon pepper fish fillets	chicken Kiev	Roast Lamb	braised steak & mushrooms	Crumbed fish & chips	sausage and bacon hotpot	Roast Chicken
Main Course 2	Mongolian lamb	Pork Scotch Steak	Vegetable Curry & Rice	Lemon Chicken	Beef Stir-fry	Chicken casserole	beef lasagne
Soft Diet	Main course 1	main course 1	main course 1	main course 1	steamed fish	main course 1	main course 1
Smooth Pureed	pork	chicken	beef	lamb	pork	fish	chicken
Dessert	Bread & Butter pudding	Pineapple upside down cake	Berry Cheesecake	Creamed Rice with Mandarin segments	Pavlova	Apple Strudel & Cream	self saucing chocolate pudding & cream
Diabetic Dessert	as above	as above	As above	As above	Strawberry cheesecake	As above	As above
Soft Dessert	as above	Cake & cream	As above	Creamed rice	Pavlova & cream	As Above	self saucing chocolate pudding & cream
Smooth Pureed Dessert	Vanilla pudding	apple & peaches	Berries and yoghurt	Fruit and cream	tropical fruit & cream	Apple & custard	chocolate custard
Evening Meal							
Soup	beef & vegetable	cream of vegetable	Cauliflower & Potato	pumpkin & orange	chicken & leek	French onion	chunky vegetable
Main	omelets	Pizza	Beef Patties & Potato Gems	Spaghetti on Toast	Bacon & Hash browns	Pasty	ham & cheese croissants
Soft Diet	As above	Steamed Spinach & Ricotta patties	Steamed as above	Spaghetti	Steamed as above	Steamed pasty	steamed honey chicken tenders
Smooth Pureed	beef	Fish	Roast Lamb	chicken	beef	lamb	Beef
Dessert	Black forest cake	pears & chocolate topping	Fruit & custard	Crème Caramel	Fruit salad & ice cream	Lamingtons	jelly fruit & whipped cream
Diabetic Dessert	Choc cake and cream	as above	as above	as above	apple & peach danish	peaches & custard	as above
Soft Dessert	as above	as above	as above	as above	as above	Peaches & Custard	as above runny cream
Smooth Pureed Dessert	Yoghurt & choc topping	as above	Fruit & custard	as above	apple & peach	Peaches and yoghurt	jelly sponge
Sandwiches	choice of	sandwich	for tea	made	to	order	
Salads	salads	for tea	made	to	order		

Please note Lunch is served with chefs selection of vegetables unless otherwise stated.
Fresh fruit is available at all meal services on request and tea trolley services every week day.
Dessert on 1 day per month can be substituted for Birthday Cake to be provided to celebrate all residents' birthdays in that month
Boiled eggs available every Friday breakfast except last Friday of month Bacon & fried eggs both only served in dining room

Photo 5.1 Example of a menu indicating why it was difficult to audit these menus due to the lack of information supplied – no breakfast, mid-meal snacks, vegetables, fluids. And again this menu has poor integration for the texture modification. Menu number 63 (Tasmania)

5.4.2.7 Texture modification

The texture modification references in these tools are in relation to their undertaking by RACH. With the lack of written information it was difficult to examine the menus for texture modification menu planning and this is addressed by study five (chapter seven).

5.4.3 Making of mandatory standards/guidelines

Compliance as shown in table 5.12 was poor overall with the highest being 24% from the Digby 2006 Menu checklist guideline. The Aged Care Standards make no provision for the use of any of these tools. In all fairness this study was always going to come to this conclusion because for any standards or guidelines to be adopted across the RACH's in Australia, they require legislation. This is exemplified by the Vulnerable Population Food Safety Plans that are mandatory in every RACH and have achieved a minimal food safety standard across the sector. The Australian Standards for Texture Modify Food and Fluids which was produced by the DAA and Speech Pathology Australia is an example of a good standard which has not been supported by legislation or the Aged Care Standards or supporting documentation and is left to home to adopt and interpret. The two photos below show how aged care homes are currently modifying the standards to include terms which are no longer encouraged and this indicates the relevance in RACH's in not using this standard as it was intended because they don't have to. It must be noted that considerable time and investment goes into the development of these tools and what value they bring to this sector is questionable.

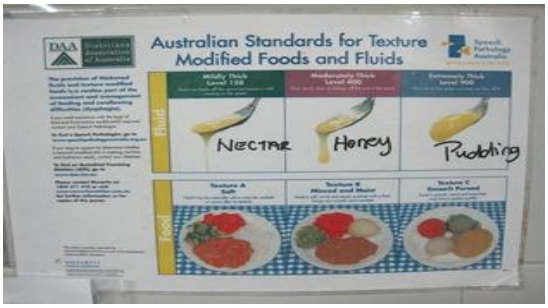


Photo 5.2 Example of a home using old terminology for texture modification Meal Environment 16 (SA)

Photo 5.3 Example of the meal delivery system with old terminology . Meal environment 6 (NSW)

5.5 CONCLUSION

The relevance of these standards and guidelines remains elusive to the aged care sector. The underpinning controlling aspect of menu planning is only as good as the information written on the menu. No standard/guidelines can be evaluated effectively unless there is sufficient information available, and this study provides evidence that current menu planning practices are inadequate across the country. Therefore before any standards/guidelines are developed in Australia, aged care homes should be guided on how to write appropriate menus which accurately describe the types of foods and fluids which are provided for both the general and texture modified menus. The limitation for assessing menus is the lack of written information on those menus. Menus are assessed as part of the accreditation process. It would be impossible for a dietitian providing menu evaluation to use some of the menus provided to this study.

If menu planning could be standardised to provide a minimum set of information, this would enable appropriate menu evaluation. The choices available across the menu pattern, food, menu and dietary specification and portion sizes, should then be specified and so evaluated. However, for that to be successful and adopted there needs to be a change to the current standards or supporting documentation within the accreditation framework to mandate guidelines which aged care homes would be required to use.

How likely is that to occur? The DAA 2012 report has already stated that it is unlikely. The next three studies examines the meal environment system and undertakes further case study analysis of texture modified menu planning and how the aged care standards operate in the meal environment. They show that the lack of mandated standards in this area leads to significant negative outcomes for residents, and that advocacy is required to create change.

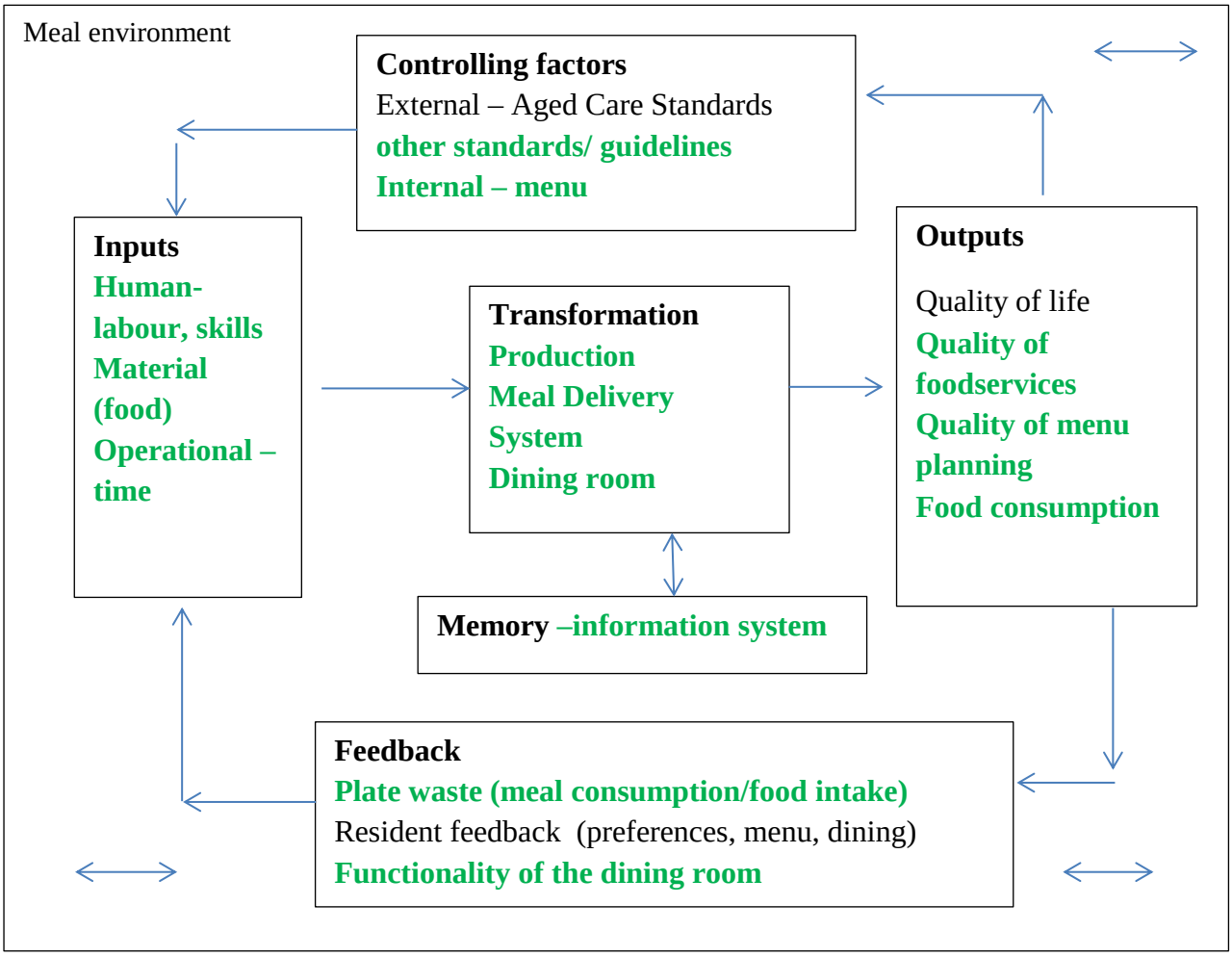
The three studies presented thus far highlight that the crucial controlling factors of the meal environment system are seriously compromised as a result of the way the Aged Care Standards are open to interpretation, giving licence to RACH's to design menus to no set standard.

CHAPTER SIX – STUDY FOUR OBSERVATIONAL DATA OF THE MEAL ENVIRONMENT

6.0 OVERVIEW

Study four examines the meal environment with the aim to gather in-depth data across the functionality of this system. The meal environment is a complex and large system within aged care homes and is underpinned by the Aged Care Standards. The observational data was undertaken across the whole system as shown by figure 6.1. Objective 1.4.2 was met outlining how the meal environment system functions.

Figure 6.1 Study Four - system investigation of the meal environment



Adapted Vaden 1980

6.1 DESIGN

Observational case study methodology was employed to examine the meal environment aspects in relation to how it functions as a system (Burns, 2000; Simmons, et al, 2002). Crucial to case study methodology is to define the group making sure that the observational environment interacts in a close way as shown by table 6.1 (Burns, 2000). The meal environment in aged care is a unique phenomenon (Polit & Hungler, 1999) and has not been rigorously researched before. This case study model does have some weakness as it can lead to reduced objectivity as only one observer was used. However, this was reduced by only spending one day in each meal environment. The other weaknesses is that is can lead to decreased generalizability, i.e. themes are established but are not able to be generalised across the whole population (Polit & Hungler, 1999).

6.1.1 Foodservice And Meal Environment Tool (FAMET)

The FAMET was developed as no complete meal environment tool could be found. The tool used is found in appendix eight. A reflective journal was also kept and used from each placement site as often during the data collection day little time was available to capture other observations, impressions and reflective thoughts.

6.1.2 Other tools used

Each home provided a copy of their menu and portion size specifications. Tool One (Bartl & Bunney 2012) from study three was used as it has a national focus for the aged care sector to measure compliance and photos were taken at each placement site to assist with the analysis of results.

6.1.3 Ethical approval

The study protocol was approved by the Human Research and Ethics Committee - Human Movement Studies The University of Queensland 12/1106. The information sheet, consent form and ethical approval can be found in appendix ten and eleven.

6.1.4 Aged Care Home information demographic data

Home information included location, which stated where the aged care home was located, the location in terms of whether it was metropolitan/rural, the type of facility classification eg, not-for-profit, number of dining rooms, meal environment in terms of care levels, dining room services observed by care level, number of residents, gender and age distributed over care levels.

6.1.5 Internal control menu

Menu information included menu cycle length, seasonality, written information, food variety and choice were also undertaken on the menus supplied by each facility as the same method employed in study two.

6.1.6 Inputs

6.1.6.1 Staffing - Number of care and foodservice staff in the meal environment supporting residents (staff to resident ratio) and a count of eating assistance across care levels.

6.1.6.2 Dietitians - Menu updated and assessed by a dietitian and was a dietitian employed by the home in a regular or as required capacity as undertaken from the National Menu Survey in study two.

6.1.6.3 Menu nutrition support was observed in regard to supplements and food fortification being provided to residents, the capacity of foodservices to offer seconds, what happened to the left overs and was the menu integrated for texture modification and diets.

6.1.6.4 Portion serve sizes were examined regarding written specifications as to what serve sizes were to be used to plate meals. The observations were made of different meal sizes offered and if portion serve size equipment was used.

6.1.6.5 Menu choice – method to change food preferences, choice offered, fluids and when residents can select food items.

6.1.7 Transformations

6.1.7.1 Product system included the source of production (cook-fresh, cook-chill) whether that was in-house (cooking on site) or outsourced (food brought in from an external catering supplier) and was production internally controlled by the home or externally by a catering company and who managed the running of foodservices.

6.1.7.2 Meal delivery system – type of meal delivery system either bulk or tray services across care level or the type of thermal support system in place to support the meal delivery system.

6.1.7.3 Meal temperature – did the meal delivery system ensure that meals were served at the correct temperature. This observation centred on meals which were left on a trolley for thirty minutes, food placed on counters unsupported for 10 minutes before going to the resident or meals sat in front of residents who require feeding support and had to wait 10 minutes. Did the thermal support system used provide enough coverage to prevent meals from going cold?

6.1.7.4 Meal presentation - drips, spills and the ability to see the meal (not smothered in gravy) was observed. The vitamised/puree meal was also observed for any enhancement made on presentation by facilities using moulds, layering techniques or premade moulded foods. Colour balance was determined by if the plate looked attractive to the eye reflected by colour combination of different foods on the plate. Colour combination was having green, brown, white, orange foods. .

6.1.7.5 Meal times – start and finish times, duration, flexible meal time options and whether duration between evening meal and breakfast exceeded 14 hours. Supper was not recorded as some homes had an open supper service and provided a snack to residents when required and supper was not a mid-meal snack used extensively as residents were asleep.

6.1.7.6 Resident eating location – where residents ate their meals was counted for each meal service and this included dining room or resident's bed room. An observation was also made if it appeared over the day that some residents ate three meals in their room and were they given the choice about staying in their room for meals (Simmons, et al, 2002).

6.1.7.7 Meal time service – tables served together and dining rooms were inclusive for all residents.

6.1.7.8 Dining room co-ordination, supervision and monitoring observations were made regarding the supervision of the dining room service, staff meal breaks, eating assistance provided to residents, food intake records taken, supplement usage monitored, monitoring of residents on vitamised and thickened fluids, consistent eating assistance and residents that were clearly malnourished being provided with assistance. Malnourished residents were viewed for physical signs such as face depressions, square shoulder or looking very thin.

6.1.7.9 Medications at meal times – interpretation of resident's meal.

6.1.7.10 Dignity in dining room – observations were made to ascertain how residents were engaged in the feeding process eg staff sitting to feed residents, staff cutting meals in front of residents, vitamised/puree food mixed together, one course of food at a time, eating devices available, residents asked before clothes protectors placed on, untidy and sloppy feeding or residents with food all over their mouth, staff feeding more than one resident at a time, eating assistance interrupted by staff, food in front of resident while waiting for assistance and no interaction between resident and staff during assistance.

6.1.7.11 Dining room aesthetics and space in the meal environment – the dining room was observed for disruptive noises such as dishwashers in operation, scraping of plates, dirty collection trolley, TV on or music playing and was the aroma of food evident? Observations of the meal environment

to ascertain if the staff in the environment appeared rushed, calm or tense. Dining room was a separate space or a shared space, the general appearance of the room was clean or cluttered.

6.1.7.12 Table and tray settings - were observed for how they were set and the overall appearance of the dining room tables and trays used to serve meals to residents.

6.1.7.13 Menu information provided to residents was also explored, how timely and were the residents informed of menu changes. The menu was also observed to compare what was written to what was served, indicating the written menu was being followed. Was there serving errors at meal services and did these get corrected for the residents?

6.1.8 Memory – information system

The production information system included the process undertake to acquire the residents' dietary preferences. This included the system for tray meals, the method undertaken to communicate dietary changes and the time taken to undertake the changes. The production system was also examined for how it managed the dietary information system, the collation time, method of communication and if there was issues between the delivery of this information to foodservices. how and when information were collected, communicated, repeated the time frame in which it took the system to make changes. A final observation was made regarding the difficulties foodservices experience in receiving timely information to make dietary change for residents.

6.1.9 Outputs

6.1.9.1 Plate waste in the meal environment

Plate waste was measured at the group level and this was undertaken using the observational method, which records plate waste using the following criteria nil 0 ¼ ½ ¾ and 1 no part of the meal was consumed. This method has been validated as a useful means of collecting such data in groups (Sherwin, Nowson, McPhee, Alexander, Wark & Flicker, 1998; Grieger & Nowson 2007). Plate waste was undertaken during the meal service as plates were brought to a central place for scraping, or from collected meal trays and the total waste for the meal service was calculated. Portion sizes were recorded for each general and vitamised/puree meal component. Portion size of food items were taken using Propert 34k digital scales (Supertex Industries Pty Ltd Australia). Portion size data was used to undertake portion size and meal consumptions analysis.

6.1.9.2 Portion size – specifications are used within the home, compared against actual portion size data recorded from the plate waste data. This was measured as being below, within or above the specified range. The average range of portion size values was determined.

6.1.9.3 Meal consumption in the meal environment - plate waste data was also used to measure the meals not consumed. There is no standard measure in Australia or under the Aged Care Standards to indicate an acceptable level of food consumption for an aged care resident. Therefore the MDS (Minimal Data Set) system in the USA (MDS-RAC Training Manual 2004) was used for determining food consumption. The MDS standard measure is at least 75% of food consumed at meal times. Therefore any meal or fluids from the plate waste data that measured ½, ¾ or 1 (all) was used to calculate the portion of a meal not consumed.

6.1.9.4 Menu mistakes and deviations - additional observation of the written menu compared against the observed menu was undertaken, and how food leftovers were used in the meal environment.

6.1.9.5 Tool compliance -Bartl and Bunney draft Tool One (2012) was used to assess the written menus and observational data was undertaken to view the guidelines specifications in the meal environment. Tool One was used as the same method from study three, with an additional observation column added to source information from the meal environment. All written menus supplied by the homes were compared against Tool One for compliance, non-compliance and written information. The meal environment was observed to see if areas of non-compliance were actually occurring even if not written on the menu.

6.2 AGED CARE HOME SAMPLE

Table 6.1 outlines the home selection based on case study criterion-based sampling, where a home is selected because it serves the real purpose and objective of the researcher, gaining insight and understanding into a particularly chosen phenomenon (Burns, 2000). In this case production, meal delivery, meal serve, dining room and care level were the case study criteria which were being addressed as shown by table 6.1. It was important to enable multiple-case study data collection to be selective of the type of home observed in a broad inclusion of different foodservice systems. Multi-case design can be considered advantageous in that the evidence can be more compelling. The down side is time allocation; however, this was overcome as the data collection period offered ample time (Burns, 2000). So as not to bias the sample, a direct attempt was made to observe different types of meal environments by a single observer.

From the survey return and from homes which volunteered contact details homes were selected and contacted to see if they would be able to undertake the observational study. Homes were approached on the following criteria

Production system – cook fresh, cook chill, external catering supplier

Meal delivery system,- total tray service, kitchen dining room, satellite kitchen dining room

Dining room – total trays services, dining room only at lunch time, dining room for all three meals

Meal service – Foodservice staff undertook service, care staff undertook service, mixture of staff

Care level – high, low and dementia care

It was part of the case study to try and select homes which provided aspect of the above . Homes were approached from New Wales and South Australia as these were the two states were accessible to the candidate researcher. Some homes also contacted the candidate and volunteered their their homes for observational study.

Homes were approached individually based on the above criteria to ensure that a mix of meal environment systems were representative . All homes approached accepted as they could see this was a good exercise to over view their systems. Homes were access across New South Wales and South Australia both metropolitan and regional areas. Fourteen homes were approached which encompassed the above criteria and all fourteen home were sent an invitation (appendix nine) explaining the study program and all fourteen homes agree to be part of the study. Each home filled in a consent form as shown in appendix ten

6.3 ANALYSIS OF DATA COLLECTION

The candidate undertook all data collection. Data collection was carried out over the entire day from breakfast to the evening meal in one meal environment using the FAMET tool, recording general observations and taking photos. The homes were observed totally and the number of dining rooms dictated how many days data collection was required in each home. Each dining room was treated as a complete meals service. In aged care often the dining situation can be different within the same home and be comprised of different meal delivery systems. There were thirty six days of data collection which equated to 36 dining rooms which equals 108 meal services observed (breakfast, lunch, evening meal).

Data from the observational FAMET tool was coded and entered onto SPSS (Student version 18 Chicago IL USA). Appendix nine outlines the coding for the FAMET tool and additional observations. Data and all observations were analysed into frequency and percentages. Plate waste data was calculated by first recording the portion size of each food item across all care levels for all meals. Plate waste was analysed by counting the amount of 0, ¼ ½ ¾ 1 for each meal and then taking the weight portion calculating the amount of food not consumed as a percentage. Once done, this was entered onto SPSS and an average percentage overall of meals services was determined. This was done for both foods and fluids.

Total average plate waste was then determined by adding up all breakfast items and dividing by the amount of breakfast items present. A bench mark figure of 20% (Nichols et al, 2002) was used to then indicate how many of the food items for breakfast, lunch and dinner failed to meet this food waste bench mark.

Plate waste was then calculated to compare the bulk meal system versus the tray meal delivery system. SPSS data was analysed using these two variables and an average portion size and percentage waste was calculated to see which had the higher wastage bulk meal delivery of tray services.

Meal consumption data was extrapolated from the plate waste data and coded as follows

All consumed and 25% not consumed
50% not consumed
75% not consumed
100% not consumed of that food or fluid item

Each meal service food item was placed under the above data coding and then tallied across all meal services from all homes within each care level. A total was determined and a percentage was calculated to determine how much of the meal was consumed. Using the MDS definition of adequate food intake, 75% of the meal eaten, the three categories of consumption were then added together to form the second category of unacceptable consumption.

The same method was employed for the use of the Bartl & Bunney Tool for measuring menu compliance as in study three. This data analysis was enhanced by including an observational analysis to gauge if the meal environment was compliant.

6.4 RESULTS

6.4.1 Home information demographic data

Table 6.1 outlines the demographic data of the 36 aged care meal environments. Total resident number was one thousand one hundred and four across all care levels. Table 6.2b outlines the individual make up of each home taking part in the observation meal environment study.

Table 6.1 description of individual homes participating in the observational study n=14 equating to 36 meal environments

Home	Type	Foodservices	Menu cycle (week)	Care level			No of Dining room	Average age	Location	State
				High No	Low No	Dementia No				
One	NP	Cook chill	6	38	95		3	86.5	Regional	NSW
Two	NP	Cook Fresh	4	34	59	20	4	85.5	Regional	NSW
Three	NP	Cook chill	8	44	35	13	4	85.8	Regional	NSW
Four	NP	Cook Fresh	4	10	30	14	4	87.6	Metropolitan	SA
Five	NP	Cook Fresh	4	74	68		3	87	Metropolitan	SA
Six	NP	Cook chill	4	16	16	16	3	82.5	Metropolitan	SA
Seven	NP	Cook fresh	4		72		1	82	Metropolitan	SA
Eight	NP	Cook fresh	4	20			2	81	Metropolitan	SA
Nine	NP	Cook chill	4	42			1	87	Metropolitan	SA
Ten	P	Cook fresh	4	51	23	25	3	85.5	Regional	NSW
Eleven	NP	Cook fresh	4	17		16	2	84.5	Regional	NSW
Twelve	NP	Cook chill	4	20			1	86.5	Regional	NSW
Thirteen	NP	Cook fresh	4			28	1	83	Regional	NSW
Fourteen	NP	Cook fresh	4	136	73		4	86	Regional	NSW
Total				502	470	132	36			

NP = not for profit P= profit

6.4.2 Internal Controls menu

6.4.2.1 Menu cycle and seasonality

Table 6.2 show's that the four week menu cycle was the most dominant menu used (81%) and all menus were rotated seasonally.

Table 6.2 Menu cycle and seasonality in 36 observed dining rooms

Menu cycle n=36	Frequency	Percentage %
Menu cycle 4 weeks 6 weeks 8 weeks	 29 3 4	 81 8 11
Season menu rotation Yes	 36	 100

6.4.2.2 Written information on menu

Table 6.3 outlines the amount of information written on the menu. From the general menu, all food items for the lunch and the evening meal were written on the menu (100%), no information was written on the menu for supper and other written information varied between 28% for breakfast to 42% for morning tea. When looking at the vitamised written menu information nothing was written for supper like the normal menu but the percentage of information for the rest of meal components was only 8% for breakfast, and 12% for lunch and the evening meal.

Table 6.3 Comparison between general and vitamised/puree written menu plans

Menu pattern component	General menu (%) Written information n=36		Vitamised/puree menu (%) Written information n=30***	
	Yes	No	Yes	No
Breakfast	10 (28)	26 (72)	3 (10)	27 (90)
Morning tea	15 (42)	21 (58)	3 (10)	27 (90)
Lunch	36 (100)		20 (67)	10 (33)
Lunch desserts	36 (100)			
Afternoon tea	14 (39)	(22 (61)	3 (10)	27 (90)
Evening meal	36 (100)		20 (67)	10 (33)
Soup*	33 (100)		30 (100)**	
Salad	12 (33)	24 (67)	-	
Sandwich	12 (33)	24 (67)	-	
Dessert*	33 (100)		2 (7)	28 (93)
Supper		36 (100)		30 (100)

*3 meal environments did not serve soup or desserts as part of the menu pattern
** soup menu was always vitamised even though it was not written down
*** only 30 meal environment served vitamised/puree meals
(%) percentages

6.4.2.3 Breakfast choice and observed food variety

Table 6.4 outlines how choice was organised for the general menu with choice seen across the breakfast menu pattern.

Table 6.4 Breakfast choices and observed food variety for general menu

Breakfast meal components n=36	General menu	
	Options	Frequency/percentage (%)
Cereal	4 dry cereals + porridge	36 (100)
Fruit	Tinned fruit Both tinned and prunes No fruit served	14 (39) 18 (50) 4 (11)
Yogurt	Served Not served	27 (75) 9 (25)
Juice	Served	36 (100)
Toast	Served	36 (100)
Hot breakfast	Scrambled eggs Baked beans Mushrooms Bacon & eggs Bacon & tomato No hot breakfast	4 (10) 1 (3) 1 (3) 1 (3) 1 (3) 28 (78)

6.4.2.4 Mid – meal snack choice and observed food variety

Table 6.5 outlines what was offered for mid-meal snacks. Only one food choice was offered and biscuits again dominated as one of the main foods offered.

Table 6.5 Mid meal choices and observed food variety

Mid-meal component n=36	Morning tea (%)		Afternoon tea (%)		Supper (%)	
	Options	Frequency/percentage	Options	Frequency/ Percentage	Options	Frequency/ percentage
Choice	One choice	36 (100)	One choice	36 (100)	One choice	36 (100)
	Biscuits	15 (42)	Biscuit	34 (94)	Biscuit	36 (100)
	Cake	9 (25)	Cake	2 (6)		
	Biscuits & cheese	3 (8)				
	Pikelets	2 (5)				
	Slice	1 (3)				
	Pastries	1 (3)				
	Scone	3 (8)				
	Fruit	1 (3)				
	Bun	1 (3)				

6.4.2.5 Lunch and evening meal choice and observed food variety

Table 6.6 outlines the lunch and evening meal choices and the variety of food components offered over 36 meals services. The lunch meal for the general menu had two choices (56%). The evening meal differs due to the nature of the menu pattern. The evening meal consists of soups, salad and sandwiches and hot meal option and residents had options as to what to choose. Less vegetables are used for the general menu hot meal option at night.

Table 6.6 Lunch and evening meal choices and observed food variety for general menu

Evening meal component n=36	General lunch meal (%)		General evening meal (%)	
	Option	Frequency (percentage)	Options	Frequency (percentage)
Level of choice	One choice Two choices	16 (44) 20 (56)	2 choices 3 choices 4 choices (soup, hot meal, salad, sandwich)	0 (0) 6 (17) 30 (83)
Meat	Beef Chicken Lamb Pork Fish Vegetarian	10 (28) 11 (31) 5 (14) 2 (5) 5 (14) 3 (8)	Beef Chicken Lamb Pork Fish Vegetarian No meat	12 (33) 6 (17) 1 (3) 2 (6) 3 (8) 9 (25) 3 (8)
Vegetable one	Potato mashed Potato boiled Potato roasted Potato bake Chips Pasta Rice Couscous	17 (46) 5 (14) 3 (8) 2 (6) 5 (14) 1 (3) 2 (6) 1 (3)	Potato mash Salad Rice Pasta Chips Bread No vegetables	6 (17) 4 (11) 8 (22) 3 (8) 2 (6) 1 (3) 12 (33)
Vegetable two	Pumpkin Carrot Sweet potato Corn Cabbage Mixed vegetables Broccoli Salad No vegetable served	9 (25) 11 (29) 2 (6) 3 (8) 2 (6) 5 (14) 1 (3) 1 (3) 2 (6)	Peas Mixed vegetables Beans No vegetable	1 (3) 3 (8) 4 (11) 28 (78)
Vegetable thee	Peas Beans Broccoli Spinach Brussels sprouts Rice Garden salad Cabbage Mixed vegetable Cauliflower	7 (18) 11 (30) 4 (11) 1 (3) 2 (6) 2 (6) 4 (11) 2 (6) 2 (6) 1 (3)	No vegetable three	

6.4.2.6 Desserts choice and observed food variety

Table 6.7 outlines the dessert choices for both lunch and the evening meal and there was only one choice offered for both meals.

Table 6.7 Dessert choices and observed food variety for general menu

Dessert component n=36	Lunch meal Frequency (percentage)		Evening meal Frequency (percentage)	
Level of choice lunch dessert	One	100%	One	100%
Lunch dessert	Fresh fruit Fruit & custard Fruit & yogurt Fruit & mousse Jelly & custard Jelly & ice cream Pavlova Pudding Cream rice Cake and custard Cake and cream Trifle Fruit crumble Tarts	5 (14) 1 (3) 4 (10) 1 (3) 1 (3) 1 (3) 2 (6) 6 (16) 1 (3) 6 (16) 1 (3) 2 (6) 3 (8) 2 (6)	Fruit & custard Fruit & yogurt Jelly & fruit Jelly & ice cream Jelly & custard Mousse Baked custard Pie Cake Ice cream Custard Pudding No dessert served	4 (11) 2 (6) 1 (3) 1 (3) 2 (6) 5 (14) 4 (11) 1 (3) 3 (8) 3 (8) 4 (11) 1 (3) 5 (13)

6.4.2.7 Food variety – general menu comparison with study two

Table 6.8 outlines food variety for the general menu across study two and four. This table shows that while some parts of the menu are not written on, foods were served to residents.

Table 6.8 Food comparing items recorded on menu and those actually observed as served

Menu Pattern	Variety of meals served general menu *(study 2)	Variety of meals served from the written menu study six	Variety of meals served general menu ** on observation study six
	161 menus (4630)	14 menus (406 days)	36 days of menus observation in dining room
Breakfast	40	Not written on menu	8
Morning tea	135	32	15
Lunch Main meal Vegetables Desserts	 259 67 275	 118 35 111	 31 22 30
Afternoon tea	98	18	2
Evening meal Soup Hot entrée Dessert	 138 276 163	 62 102 67	 26 25 15
Supper	5	Not written on menu	5
Total number of food variety	1456	545	179

*menu audit study two **what was observed in the meal environment

6.4.3 Inputs System Results

6.4.3.1 Staff to resident ratio and eating assistance percentage

Table 6.9 outlines the staffing ratios where a high number indicated that there were more residents per individual staff person as seen in low care. This is due to the care needs being reduce. Staffing rations were lower in dementia care and high care indicating that each staff person had fewer residents to look after to accommodate the increase care needs requiring more individual care. Dementia care had a staff to resident ratio of 6.3 for the morning and 7.8 for the afternoon. High care had the highest staff to resident ratio 7.3 for the morning and 8.0 for the evening services indicating that less staff are available to assist with the evening meal service. Across all care levels, the staff rations decreased for the evening services, indicating that less staff were available at this meal service time..

Table 6.9 Staff to resident ratio and eating assistance divided across care levels

Meal environment	Number of residents	Observed eating assistance as a percentage *	Morning		Afternoon	
			Number of care staff	Number of foodservice staff	Number of care staff	Number of foodservice staff
Low care						
Total Residents	502	54 (11%)	40	13	39	10
Staffing Ratio			**12.5**	**38.6**	**12.87**	**50.2**
Net staffing loss from the morning					Net loss 0.37 positions	
Dementia care						
Total Residents	132	31 (23%)	21	2	17	2
Staffing Ratio			**6.3**	**66**	**7.8**	**66**
Net staffing loss from the morning					Net loss 1.5 position	
High care						
Total Residents	470	209 (44%)	64	6	59	6
Staffing Ratio			**7.3**	**78**	**8.0**	**78**
Net staffing loss from the morning					Net loss of 0.7 positions	

*average eating assistance observed across all care levels

6.4.3.2 Dietitians input

Table 6.10 indicated that 64% of homes did not employ a dietitian and that 58% of menus were not updated and assessed by a dietitian within a year.

6.10 Dietitians employment status and menu checked by dietitian

Dietitians employment status	Criteria	Frequency (percentage)
Was a dietitian employed by the home n = 14	Yes regular visits Yes as required No	2 (14) 3 (22) 9 (64)
Menu updated and assessed regularly by dietitian	Yes at least yearly No not yearly	5 (36) 9 (64)

6.4.3.3 Menu nutrition support

Table 6.11 outlines the nutrition support strategies. Very little menu support across all strategies was used by homes. Basically the menu was integrated for diabetes but poorer integrations was seen for the vitamised/puree meals with left overs being used for later meals which would lead to poor menu integration.

Table 6.11 Observed menu nutrition support strategies in place in meal environment

Nutrition support n=108		Breakfast (%)	Lunch (%)	Dinner (%)
Supplements used in the meal environment	Yes No	36 (100)	36 (100)	36 (100)
Food fortification used in the meal environment	Yes No	2 (6) 34 (94)	1 (3) 35 (97)	1 (3) 35 (97)
Additional foods were offered *	Yes No	5 (14) 31 (86)	3 (8) 33 (92)	2 (6) 34 (94)
Foodservice had capacity to offer seconds *	Yes No	15 (42) 21 (58)	21 (58) 15 (42)	18 (50) 18 (50)
Leftover food	Thrown away Eaten by staff Returned to kitchen for vitamised meal	11 (31) 8 (22) 17 (47)	8 (22) 8 (22) 1 (3) 19 (53)	9 (25) 8 (22) 19 (53)
Menu integrated for textures	Yes No		20 (56) 16 (44)	12 (33) 24 (67)
Menu integrated for special diets such as diabetes	Yes No	36 (100)	36 (100)	36 (100)

*tray services limit the capacity for the meal environment to be able to do this

6..4.3.4 Portion size and meal size

Table 6.12 outlines if homes had portion size documentation and whether it was used during meal service and were different meal sizes available for residents.

Table 6.12 Observed portion and meal sizes served in meal environments

Portion size n=108	Criteria	Breakfast (%)	Lunch (%)	Dinner (%)
Documented portion size information available	Yes	36 (100)	36 (100)	36 (100)
Portion size equipment used	Yes No	5 (14) 31 (86)	5 (14) 31 (86)	5 (14) 31 (86)
Different meal sizes provided to residents *	Yes No	27 (75) 9 (25)	24 (67) 12 (33)	25 (69) 11 (31)

*meal sizes – small, medium or large

6.4.3.5 Menu choice

Table 6.14 outlines the choice options available to residents. The breakfast meal was mainly selected upon admission, with the evening meal allowing residents more options to make choices on the day (42%) and 19% three days before the day of the menu. Observations were made during meals services to determine if homes used any means to identify resident's choices and preferences for residents unable to communicate verbally. Those residents on a vitamised/puree diet had no choice of food offered at all.

Table 6.13 Observed choice of meals

Choice n=108	Available	Breakfast (%)	Lunch (%)	Evening meal (%)
When is choice available to residents	Upon admission On the day Day before 3 days before Week before No choice	36 (100)	 1 (3) 1 (3) 7 (19 3 (8) 24 (67)	 15 (42) 1 (3) 7 (19) 3 (8) 10 (28)
Method available to change food preferences	Yes No	36 (100)	36 (100)	36 (100)
Observations regarding a system in place to enable residents who are unable to communicate to choose meal preferences	Yes No	0 36 (100%)	0 36 (100%)	0 36 (100%)
Choice offered to those on a vitamised/ puree diet	Yes No	0 36 (100%)	0 36 (100%)	0 36 (100%)

6.4.4 Transformations systems results

6.4.4.1 Production and who is in charge of foodservices

Table 6.14 indicates that 65% of meal environments were using cook fresh as there production system, most meal environment's (92%) production source was in house and internally controlled at 64%. No meal environment used standard recipes.

6.14 Production system and who is in charge of foodservices for all meal services

Production and meal delivery system n=36	Frequency	Percentage
Production system Cook-chill Cook-fresh	 12 24	 33 67
Production source In house Outsources	 33 3	 92 8
Production control Internal External	 23 13	 64 36
In charge of foodservices Chef Cook Director of care	 17 5 14	 47 14 39
Standard recipes used in kitchen daily* Yes No	 33	 100

*three meals environments received external catering

6.4.4.2 Meal delivery system and thermal support of meals

Table 6.15 indicates that high care used more tray services (86%). Most areas used some form of thermal support system to support meal services. Meal delivery systems did differ between meals.

Table 6.15 Meal delivery system and thermal support of meals

Meal delivery system and thermal support system	Breakfast (%)	Lunch (%)	Evening meal (%)
Food delivery system n=108			
Total tray system	21 (58)	15 (42)	18 (50)
Bulk meal delivery	15 (42)	21 (58)	18 (50)
Care level by meal delivery system	Tray services	Bulk services	_____
High care n=14	12 (86%)	2 (14%)	
Low care n= 15	3 (20%)	12 (80%)	
Dementia care n=7	3 (43%)	4 (57%)	
Thermal support system n=108			
Baine marie	8 (22)	14 (39)	11 (31)
Dome and base system	21 (58	15 (41)	18 (49)
Oven	2 (6)	2 (6)	2 (6)
No thermal support system	5 (14)	5 (14)	5 (14)

6.4.4.3 Meal temperatures

Table 6.16 outlines that some meal services were observed providing meals which were at unacceptable temperatures It includes both hot and cold meals.

Table 6.16 Temperature of delivered meals in observed meal environments

Meal temperature n=108		Breakfast (%)	Lunch (%)	Evening meal (%)
Meal delivery system ensures that meals were served at the correct temperature	Yes No	19 (53) 17 (47)	19 (53) 17 (47)	17 (47) 19 (53)
Meal delivery system (> 30 minutes meals given out by staff)	Yes No	32 (89 4 (11)	32 (89) 4 (11)	27 (75) 9 (25)

6.4.4.4. Meal presentation

Table 6.17 outlines if the meals served are pleasing visually. One of the main issues for the vitamised/puree meal is that the colour combination was not visually appealing, especially for 50% of the evening meals. There was also excessive amounts of gravy used which smothered the meal resulting in it being unrecognisable.

6.17 Observed meal presentation of general and vitamised/puree meals

Meal presentation		Breakfast (%)	Lunch (%)	Evening meal (%)
Meals served were neat with no spills n=108	Yes No	29 (81) 7 (19)	17 (47) 19 (53)	21 (58) 15 (42)
Meals had good colour presentation* n=108	Yes No	36 (100)	29 (81) 7 (19)	27 (75) 9 (25)
Vitamised/Puree meals were neat with no spills n=90	Yes No	25 (83) 5 (17)	20 (67) 10 (33)	18 (60) 12 (40)
Good colour combination for puree meal n=90	Yes No	30 (100)	21 (70) 9 (30)	15 (50) 15 (50)
Vitamised/Puree meal was smothered with gravy/sauces n=60	Yes No	_____	17 (57) 13 (43)	18 (60) 12 (40)

*Meal presentation was pleasing to the eye (mixture of white, green, orange, other colours in the correct combination to enable the meal to appear appealing)

6.4.4.5 Meal times

Table 6.18 outlines meals starting on time, and no flexible meal times for residents. Only two homes had a longer than 14 hours between the evening meal and breakfast.

Table 6.18 Times of meals and length of eating occasion

Meal times n=108	Parameters	Breakfast (%)	MT (%)	Lunch (%)	AT (%)	Evening mean (%)
Meal started on time	Yes No	34 (94) 2 (6)	36 (100)	33 (92) 3 (8)	36 (100)	34(94) 2 (6)
Meal start time		0630-0900	0930-1100	1130-1200	1300-1530	0430-0600
Average time Low care Dementia High care	Minutes	 55 70 59	 35 45 50	 43 45 43	 30 40 55	 45 54 66
Flexible meal options	Yes No	36 (100)	36 (100)	36 (100)	36 (100)	36 (100)
Time between evening meal and breakfast exceeding 14 hours * n=36		Yes 2(6) No 34 (94)				

*Bartl & Bunney 2004

6.4.4.6 Resident eating location

Table 6.19 outlines where residents ate their meals. High care had the highest percentage of residents having all meals in their rooms.

Table 6.19 Resident eating location across care levels

Eating location	Low care eating location (%) n=15	Dementia care eating location (%) n=7	High care eating location (%) n=14
Breakfast			
Dining room	78	68	8
Bed room	22	32	92
Lunch			
Dining room	80	89	46
Bed room	20	11	54
Evening meal			
Dining room	79	83	31
Bed room	21	17	69
Observed three meals in room *			
Yes	3	7	14
No	12	0	0

*observed that some residents ate all three meals in their rooms

6.4.4.7 Meal time service to residents

Table 6.20 outlines how tables were not served together and often the dining room was not inclusive.

Table 6.20 Table service and inclusion of residents

Meal time service n=36	Parameters	Breakfast (%)	Lunch (%)	Evening meal (%)
Tables are served together (that is all residents received the meal together)	Yes No	4 (11) 32 (89)	2 (6) 34 (94)	3 (8) 33 (92)
Dining room seating is designed so that all residents are inclusive	Yes No	21 (58) 15 (42)		

6.4.4.8 Dining room co-ordination, supervision and monitoring

Table 6.21 outlines the level of supervision in dining rooms. Staff having their own meal break during meal services also reduced supervision. Overall the monitoring of meals services was non-existent for food intake, supplements or residents on texture modified or thickened fluids. The meal environment was observed with residents struggling to feed themselves and having no assistance. No dining room had a central person to co-ordinate service delivery to residents.

Table 6.21a Dining room supervision, monitoring and assistance

Dining room n=36	Parameters	Breakfast (%)	Lunch (%)	Evening meal (%)
Dining room was supervised at all times	Yes No	24 (67) 12 (33)	23 (64) 13 (36)	11 (31) 25 (69)
Staff going to breaks during mealtimes	Yes No	14 (39) 22 (61)	14 (39) 22 (61)	14 (39) 22 (61)
Did home indicate that was an acceptable practise n=14	Yes No	9 (64) 5 (36)	9 (64) 5 (36)	9 (64) 5 (36)
Food intake records taken	Yes No	0 36 (100)	0 36 (100)	0 36 (100)
Any monitoring of supplement uptake	Yes No	0 36 (100)	0 36 (100)	0 36 (100)
Any monitoring of residents on thickened fluids or vitamised diet	Yes No	0 36 (100)	0 36 (100)	0 36 (100)
Observation that some residents took over 30 minutes to consume their meals due to no assistance	Yes No	36 (100)	36 (100)	36 (100)
Documentation to indicate which residents required assistance during meal times – present at meal times (diet cards/flagging system or meal co-ordination by staff)	Yes No	0 36 (100)	0 36 (100)	0 36 (100)
Observed poor food intake in the meal environment due to poor assistance provided	Intake poor	36 (100)	36 (100)	36 (100)
Dining room had a position to co-ordinate meals services and ensure that meals were correct Yes No		36 (100)	36 (100)	36 (100)
Inconsistent eating assistance during the meal service over the day*	Yes No	22 (61) 14 (39)		
Residents observed as being malnourished and no monitoring system in place	Yes No	36 (100)		

*Assisted with feeding at one meal and not another

6.21 b Mid meal snacks provision and supervision provided to resident

Mid-meal snacks	Morning tea (%)			Afternoon tea (%)		
	Low care n=15	Dementia n=7	High care n=14	Low care n=15	Dementia n=7	High care n=14
Mid-meal set up Yes * No	 10 (67) 5 (33)	 5 (71) 2 (29)	 3 (21) 11 (79)	 8 (53) 7 (47)	 4 (57) 3 (43)	 3 (21) 11 (79)
Snack created a conclusive environment Yes No	 9 (60) 6 (40)	 6 (86) 1 (14)	 3 (21) 11 (79)	 9 (60) 6 (40)	 5 (71) 2 (29)	 3 (21) 11 (79)
Snack served by Care Foodservice staff	 12 (80) 3 (20)	 6 (86) 1 (14)	 4 (31) 9 (69)	 12 (80) 3 (20)	 6 (86) 1 (14)	 4 (31) 9 (69)
Staff assistance observed during mid-meal time Yes No Not needed	 6 (40) 5 (33) 4 (27)	 6 (86) 1 (14)	 5 (36) 9 (64)	 6 (40) 5 (33) 4 (27)	 6 (86) 1 (14)	 5 (36) 9 (64)
1 hour after snack/fluids was served was there observed snacks not consumed* Yes No	 6 (40) 9 (60)	 1 (14) 6 (86)	 12 (86) 2 (14)	 6 (40) 9 (60)	 1 (14) 6 (86)	 12 (86) 2 (14)

*staff made the meal occasion inclusive

6.4.4.9 Medications in the meal environment

All homes had the medication trolley in the meal environment during the meal service..

6.4.4.10 Dignity during meal service

Table 6.22 outlines how the meal environment responds to the independence and dignity of residents. The practice of asking residents before a meal was removed from the table if they have finished with their meals was not observed and when a resident needed a meal cut up to assist with eating, no meal environment allowed the resident to see the meal before it was altered. Staff in the meal environments often put all the meal down in front of the resident or on trays and feeding residents with dignity was at times difficult to achieve.

Table 6.22 Dignity and respect during dining service

Dignity of meal service n=36	Parameters	Breakfast (%)	Lunch (%)	Evening meal (%)
Staff observed being seated to assist resident during the meal service	Yes No	6 (17) 30 (83)	20 (56) 16 (44)	17 (47) 19 (53)
Staff ask before they take plates away from residents	Yes No	24 (67) 12 (33)	17 (47) 19 (53)	11 (31) 25 (69)
Residents can view meal before it is cut up	Yes No	36 (100)	36 (100)	36 (100)
Residents on puree meals had all foods mixed together to assist with feeding n =30	Yes No		8 (27) 22 (73)	11 (37) 19 (63)
Resident were served one food course at a time	Yes No	36 (100)	36 (100)	36 (100)
Eating devices available	Yes No	36 (100)	36 (100)	36 (100)
Residents asked before having clothes protectors put on	Yes No	36 (100)	36 (100)	36 (100)
Poor feeding practices – food into mouth	Yes No	18 (50) 18 (50)	17 (47) 19 (53)	19 (53) 17 (47)
Observed staff feeding more than one resident at a time	Yes No	3 (8) 33 (92)	3 (8) 33 (92)	4 (11) 32 (89)
Feeding of residents interrupted by other staff	Yes No	7 (19) 29 (81)	13 (36) 24 (64)	11 (31) 25 (69)
Food sat in front of resident waiting for assistance	Yes No	14 (39) 22(61)	14 (39) 22 (61)	20 (56) 16 (44)
When residents were being assisted to eat was there demonstrated interactions between all staff and all residents	Yes No	10 (28) 26 (72)	12 (33) 24 (67)	11 (31) 25 (69)
It was observed that some residents were in their room for all three meals	Yes No	36 (100)	36 (100)	36 (100)

6.4.4.11 Disruption in the dining room

Table 6.23 outlines that the dining room services were disrupted with scraping of plates (97%), dishwashers being turned on and the TV on during meals.

Table 6.23 Disruptive noise in the dining room

Disruption in dining room n=36	Parameters	Breakfast (%)	Lunch (%)	Evening meal (%)
Dishwasher is used during meal service – noise	Yes No	7 (19) 29 (81)	7 (19) 29 (81)	7 (19) 29 (81)
Plates are scraped away from the dining area	Yes No	1 (3)\ 35 (97)	1 (3) 35 (97)	1 (3) 35 (97)
Trolley is taken around the dining room to collect plates while meal service is still going	Yes No	25 (69) 11 (31)	25 (69) 11 (31)	25 (69) 11 (31)
TV was on in the dining room – loud	Yes No	5 (14) 31 (86)	11 (31) 25 (69)	15 (42) 21 (58)

6.4.4.12 Dining room aroma and space

Table 6.24 highlights that very few dining rooms had the aroma of food. This is especially difficult to achieve with tray meals services. Overall the dining room space was free from clutter but most did not have any music playing during meal time

Table 6.24 Dining room aroma and settings

Aroma and settings n=36	Parameters	Breakfast (%)	Lunch (%)	Evening meal (%)
The aroma of the meal is present during the meal service	Yes No	5 (14) 31 (86)	9 (25) 27 (75)	5 (14) 31 (86)
Dining room cluttered	Yes No	11 (31) 25 (69)	11 (31) 25 (69)	11 (31) 25 (69)
Dining room is prepared with neatly organised tables that are clean and set	Yes No Dining room not set up	17 (47) 5 (14) 14 (39)	14 (39) 8 (22) 14 (39)	11 (30.5) 11 (30.5) 14 (39)
Music is playing	Yes No	4 (11) 32 (89)	6 (17) 30 (83)	5 (14) 31 (86)

6.4.4.13 Table and tray settings

Only 47% of meal services when using trays used a mat and/or embossed tray to assist with tray set up. Only 28% of homes prepared trays so that they resembled a table setting or arranged the trays so that they were organised and neat. It was not observed in any meal service that prior to meal starting staff took the time to set up residents in their rooms.

6.4.5 Memory Information systems

6.4.5.1 Dietary and menu information systems

Table 6.25 outlines data which shows how the information systems in aged care work. Most meal environments (92%) had some sort of system in place. Most meal environments (78%) used a form when a dietary change was required by residents but 22% of meal environments had a verbal system in place. Most homes (89%) had no system in place to collect dietary information from residents unable to communicate. The time taken to ensure that changes were made to dietary requests were 70% within 24 hours, 22% within 48 hours and 8% taking longer than a week.

In regards to the production management of menu information, 67% of meal environments used a manual paper based system while 33% of production kitchens used data spread sheets. With 58% of homes took over a week to update their records. All foodservices reported that they at times struggled to get timely information regarding resident's food requirements and dietary changes.

Table 6.25 Dietary and menu information systems

Information system n=36	Criteria	Frequency	Percentage
Menu information collected upon admission for dietary preferences	Yes No	36	100
A system for monitoring , documenting resident preference (diet card)	Yes No	36	100
Dietary information system for kitchen	Yes No*	33 3	92 8
Method for dietary information system	Card system Folder Clip board White board Folder and white board Nothing	6 15 4 4 4 3	17 42 11 11 11 8
Dietary information for trays used during meal services	Dietary card Written on tray mat No system	23 4 9	64 11 25
Method undertaken to record changes to dietary information	Form Verbally	28 8	78 22
Method to assist residents who are unable to communicate dietary changes	Relative/friends No system	4 32	11 89
Time taken to change dietary information	24 hours 48 hours 1 week	25 8 3	70 22 8
Production system to manage dietary system	Data sheet spread Manual paper based	12 24	33 67
Collation time to manage production system	2 hours per week 4 hours per week 6 hours per week More than one day a week	1 7 7 21	3 19 19 59
Emergency (immediate) dietary changes	Same day Longer than a day	22 14	61 39
Method to communicate immediate dietary changes	Written on white board Communication diary More than one methods (white board, card, communication diary)	4 12 20	11 33 56
Foodservice staff reporting difficulties with getting timely information regarding residents food needs	Yes No	36	100
Menu is on display for resident to view daily in dining room	Yes No	20 16	56 44
The menu board indicated what is on the days menus	Yes No	24 12	67 33
The menu board indicated what was on the menu for the vitamised/puree	Yes No	36	100

*external catering supplier

6.4.6 Outputs system results

6.4.6.1 Breakfast plate waste across care level

Table 6.26 outlines the plate waste across care levels for breakfast. High care across all food items had the highest plate waste, with yogurt (47%) hot breakfast (44%), puree fruit (42%) supplements (54%) and thickened fluids (40%).

Table 6.26 Plate waste for breakfast across all care levels (visual estimates)

Meal time location	Breakfast total n=36		Breakfast high care n=14		Breakfast dementia n=7		Breakfast low care n=14	
Food	Average portion size	% wastage	Average portion size	% wastage	Average portion size	% wastage	Average portion size	% wastage
Porridge (g)	171	12	173	18	171	6	166	12
Cereal + milk (g)	156	16	142	24	158	9	179	14
Toast (g)	34	27	34	37	34	20	31	22
Juice (ml)	158	23	159	27	164	19	143	22
Fruit tinned (g)	71	21	64	32	74	14	76	20
Prunes (g)	51	26	51	33	50	30	48	0
Yogurt (g)	87	27	85	47	89	4	86	17
Hot breakfast (g)	95	31	94	44	101	24	75	8
Puree fruit (g)	64	41	48	42	97	40	*	*
Tea (ml)	150	18	150	31	150	6	150	15
Water (ml)	163	37	*	*	162	37	*	*
Thickened fluids (ml)	180	30	196	40	*	*	145	6
Supplements (ml)	196	43	200	54	*	*	*	*

*was not served

6.4.6.2. Lunch plate waste across care levels

Table 6.27 outlines the plate wastage across care levels for lunch. High care again had the highest majority of food items with the highest plate waste. Thickened fluids for high care had a plate waste of 60% and supplements of 51%.

Table 6.27 Plate waste for lunch across all care levels (visual estimates)

Meal time and location	Lunch total n=36		Lunch high care n=14		Lunch dementia n=7		Lunch low care n=15	
Foods	Average portion size	% wastage	Average portion size	% wastage	Average portion size	% wastage	Average portion size	% wastage
Meat (g)	113	23	111	26	109	22	124	18
Vegetables combined (3) (g)	175	29	176	32	178	30	167	23
Lunch dessert (g)	130	17	139	25	130	14	115	7
Puree meal total (meat and vegetables) (g)	270	38	280	41	231	45	280	26
Dessert puree (g)	123	28	132	29	112	35	112	22
Tea (ml)	150	18	150	36	150	7	150	23
Water (ml)	152	25	175	19	160	30	110	20
Cordial (ml)	193	34	193	39	197	35	186	23
Thickened fluids (ml)	191	48	195	60	*	*	186	35
Supplements (ml)	165	51	165	51	*	*	*	*

*was not served

6.4.6.3. Evening meal plate waste across care levels

Table 6.28 outlines the plate waste across care levels for the evening meal. Again high care had the highest plate waste across all food provided.

Table 6.28 Plate waste for evening meal across all care levels (visual estimates)

Meal time and location	Evening meal n= 36		Evening meal high care n=14		Evening meal dementia n=7		Evening meal low care n=15	
Foods	Average portion size	% wastage	Average portion size	% wastage	Average portion size	% wastage	Average portion size	% wastage
Soup (ml)	167	28	180	41	163	14	153	30
Hot entrée (g)	163	29	158	39	169	25	156	24
Sandwich (g)	165	30	177	43	163	26	155	21
Salads (g)	175	31	180	54	169	12	*	*
Puree meal (meat & vegetables) (g)	199	34	207	38	210	36	171	21
Dessert(g)	109	15	101	21	112	8	119	16
Puree dessert (g)	124	25	104	27	110	22	180	22
Tea (ml)	150	17	150	35	150	5	150	24
Water (ml)	175	42	150	47	175	44	200	21
Cordial (ml)	191	26	190	30	200	27	187	15
Thickened fluids (ml)	190	35	195	43	*	*	180	20
Supplements (ml)	170	49	170	49	*	*	*	*

*not served

6.4.6.4 Bench mark and average plate waste

Table 6.29 summarises the plate waste for all meals across all care levels, using the figure of 20% plate waste as the acceptable (tolerable) allowance (Nichols, et al, 2002). All meals for high care were above the acceptable level of 20%. For the evening meal all care levels were above the acceptable allowance. Only breakfast for the dementia and low care had an average plate waste below 20%.

Table 6.29 Average plate waste across all care levels in 36 dining rooms

Plate waste	High care n=14			Dementia care n=7			Low care n=15		
Meal	Breakfast	Lunch	Evening meal	Breakfast	Lunch	Evening meal	Breakfast	Lunch	Evening meal
Average	33%	34%	38%	16%	24%	24%	10%	22%	24%
>20% waste on food items	11/12 (92%)	9/101 (90%)	12/12 (100%)	4/11 (36%)	6/8 (75%)	6/10 (60%)	2/11 (20%)	6/9 (67%)	8/10 (80%)

6.4.6.5 Plate waste for tray versus bulk meal delivery systems

Table 6.30 outlines the tray meal delivery system having more plate waste then the bulk meal delivery system. For the breakfast meal component all items except prunes had the most waste with a tray system. For the lunch component, all items except vegetables, puree dessert and water had the most waste with a tray system. For the evening meal only water had the lowest wastage for a tray system.

Table 6.30 Plate waste from bulk delivery system compared to tray meal services in 36 dining rooms

Foods	Bulk meal delivery system		Tray meal delivery system		Waste
Breakfast Tray n=21 Bulk n=15	Average portion size	Waste %	Average portion size	Waste %	
Porridge (g)	171	8	170	21	Tray
Cereal + milk (g)	161	12	150	21	Tray
Toast (g)	34	20	33	37	Tray
Juice (ml)	161	20	153	26	Tray
Fruit tinned (g)	77	13	65	28	Tray
Prunes (g)	49	31	52	22	Bulk
Yogurt (g)	94	7	82	38	Tray
Hot breakfast (g)	96	21	94	44	Tray
Puree fruit (g)	97	40	48	42	Tray
Tea (ml)	150	11	150	26	Tray
Water	162	37			No water on trays
Thickened fluids (ml)	163	5	192	40	Tray
Supplements (ml)	190	11	200	65	Tray
Lunch Tray n= 15 bulk n= 21					
Meat (g)	105	21	122	25	Tray
Vegetable combination (g)	180	30	169	29	Bulk
Lunch desserts (g)	123	16	139	18	Tray
Puree meals total (meat and vegetables) (g)	245	35	290	41	Tray
Dessert puree (g)	120	32	136	26	Bulk
Tea (ml)	150	8	150	29	Tray
Water (ml)	170	33	130	16	Bulk
Thickened fluids (ml)	193	48	191	48	Same
Cordial (ml)	196	32	190	37	Tray
Evening meal tray n = 18 bulk n = 18					
Soup (ml)	165	17	170	42	Tray
Hot entrée (g)	168	25	155	35	Tray
Sandwiches (g)	165	26	165	35	Tray
Salads (g)	173	13	178	49	Tray
Puree meals (meat & vegetables) (g)	204	28	195	37	Tray
Dessert g)	106	11	112	20	Tray
Puree dessert (g)	122	23	125	27	Tray
Tea (ml)	150	7	150	27	Tray
Water (ml)	168	44	187	40	Bulk
Thickened fluids(ml)	190	28	191	36	Tray
Cordial (ml)	194	26	188	26	Same

6.4.6.6 Portion size

Table 6.31 outlines that all homes had specified portion size as shown in column one. Column two outlines the wide range of portion sizes used by homes. What is important to note is the very small portion sizes which were used and that more than 50% of most of the menu patterns was not meeting the portion size as stated by homes.

Table 6.31 Portion size specified on menu compared to actual observe in the meal environment

Menu pattern n=108	Portion sizes	General	General		
	Range stated by documentation	Range general menu	Below %	Within %	Above %
Breakfast Trays n=15 Bulk 21					
Porridge g	100-200	140-220	**53**	6	41
Tinned fruit g	100-120	30-120	**84**		6
Juice ml	100-200	75-200	**39**	19	42
Meat g	75-120	60-190	**31**	10	7
White vegetable g	80-90	45-130	**74**	6	20
Orange vegetable	60-80	34-120	**69**	13	18
Green vegetable	60-80	21-106	**75**	9	16
Dessert	100-140	60-241	**57**		43
Soup	150-200	95-220	**52**	12	36

6.4.6.7 Meal consumption in the meal environment

Table 6.32 outlines the overall meal consumption across all care levels. A bench mark figure of 25% was used as an acceptable amount of food left uneaten as determined by the MDS data set in United States of America (MDS-RCA Training Manual, 2004). The amount of meals left untouched in low care was similar to that of dementia care. However the same cannot be said for the high care area where, across all meals of the day, there was more than 25% of meals not being consumed.

Table 6.32 Meal consumption across all care levels

Meal environment n=108	Breakfast				Lunch				Evening meal			
	All eaten 25% not eaten	50% not eaten	75% not eaten	100% not eaten	All eaten 25% not eaten	50% not eaten	75% not eaten	100% not eaten	All eaten 25% not eaten	50% not eaten	75% not eaten	100% not eaten
Low care												
Total percentage	1260	129	17	87	1051	233	92	120	1194	236	35	116
Average percentage	84	9	1	6	70	16	6	8	79	15	2	8
Combined percentage	84	16			70	**30**			75	**25**		
Dementia care												
Total percentage	568	62	6	66	536	100	16	48	529	85	27	55
Average percentage	81	9	1	9	77	14	2	7	76	12	4	8
Combined percentage	81	19			77	23			76	24		
High care												
Total percentage	902	163	39	306	882	204	76	238	837	220	82	306
Average percentage	65	11	2	22	63	15	5	17	58	15	6	21
Combined percentage	65	**35***			63	**37***			58	**42***		

* MDS 75% of meals consumed

6.4.6.8 Fluid consumption

Table 6.33 outlines fluids which were not consumed during meal services. The only fluid that was below 25% was that for breakfast for the low care dementia meal service. All other meal time fluid consumption was above the 25%.

Table 6.33 Fluid consumption across all care levels

Meal	Breakfast				Lunch				Evening meal			
Meal environment menu n=108	All drank 25% not drank	50% not drank	75% not drank	100% not drank	All drank 25% not drank	50% not drank	75% not drank	100% not drank	All drank 25% not drank	50% not Drank	75% not drank	100% not drank
Low care												
Total percentage	1148	140	30	182	1022	257	40	181	1053	274	48	125
Average percentage	77	9	2	12	68	17	3	12	70	18	3	9
Combined percentage	77	23			68	**32**			70	**30**		
Dementia care												
Total percentage	553	91	9	47	471	175	9	44	422	128	43	107
Average percentage	81	12	1	5	67	25	1	7	60	19	6	15
Combined percentage	81	19			67	**33**			60	**40**		
High care												
Total percentage	871	199	44	281	676	282	97	345	869	194	70	269
Average percentage	62	14	3	20	48	20	7	25	61	13	5	21
Combined percentage	62	**37***			48	**52***			61	**39***		

* MDS 75% of meals consumed

6.4.6.9 Menu mistakes and deviations

Table 6.34 outlines if the menu was altered in the meal environment, the communication of alteration and meal environment response to menu changes. The observed alteration to the menu increased from breakfast at 6% to the evening meal at 41%. When a menu was altered no meal environment communication was observed being provided to the residents to indicate what the menu alteration was. Serving errors were those noted at point of service in the meal environment and again the serving errors increased as the day progressed with the breakfast meal at 22% and the evening meal at 41%. Some of the errors included residents receiving the wrong meal, wrong texture modified meal and wrong meal size. When serving errors occurred, all meal environments had the capacity to rectify the mistake. No meal environment had any position or co-ordinator that undertook the role of ensuring all residents received the correct meal requirements. Of those that did have serving errors it was observed that for the evening meal, 81% of serving errors were not corrected. Some of the observed reasons for this included design due to the kitchen being too far from the dining room for staff to obtain the correct meal, the meal delivery system did not have poor capacity to supply extra foods especially on tray meals services, the dining room itself had poor food provision and one dining room had no fridge.

Table 6.34 Observed menu mistakes* and deviations from written menu

Menu n=108	Breakfast	Lunch	Evening meal
Menu mistakes (part of the menu for that meal which was different to what was written) Yes No	 34 (94) 2 (6)	 27 (75) 9 (25)	 20 (56) 16 (44)
Observed menu changes	Hot breakfast was not correct (2)	Change dessert (4) Different main meal (1) Vita meal was different to menu (5)	Different soup (9) Different desserts (3) Different vitamised/puree (4)
Were residents informed of changes to the menu Yes No	 2 (100)	 9 (100)	 16 (100)
Serving errors observed during meal service Yes No	 8 (22) 28 (78)	 14 (39) 22 (61)	 16 (44) 20 (56)
Types of serving errors observed	Supplements missing (6) Food items missing (10) Wrong cereals (3) Wrong milk used on cereals (1)	Wrong meals (7) Wrong texture modified meal (5) Dietary mistake (3) Meal size (9) No plate guard (4) Wrong vegetables (4)	Wrong meal (3) Wrong texture modified meal (7) Dietary mistake (4) Meal size (11) No plate guard (3) Wrong vegetables (4)
Was there observed evidence that staff used the meal information system to check residents meals Yes No	 36 (100)	 36 (100)	 36 (100)
When a serving error was noted what was the capacity of the meal service to correct Yes No	 8 (100)	 14 (100)	 16 (100)
Capacity of observed serving errors were corrected Yes No	 5 (63) 3 (37)	 4 (29) 10 (71)	 3 (19) 13 (81)
General observations	Staff did not have time to walk to kitchen or only two staff present and unsafe to leave residents with only one staff person Kitchen was too far from dining room Dining room areas did not contain extra foods (one area had no fridge) No extras on tray meal services Kitchen failed to put items onto trolleys Staff did ring kitchen to get some assistance Staff complained about the lack of communication with kitchen		

*mistakes is defined as when what was stated on menu was not served

6.4.6.10 Tool One Bartl and Bunney 2012 compliance and compliance upon observation

Table 6.35 outlines the tool having similar levels of poor compliance with some improvement upon observation. This indicates that even though the written menu was only compliant 4%, upon observation the meal environment was compliant for some of these components 19%. Still indicating that the relevance of these tools is questionable.

Table 6.35 Tool one Bartle and Bunney 2012 Menu and observational analysis used previously *

Components N=14	Guidelines	Yes the menu was compliant	No the menu was not compliant	No written information or not enough written information on the menu	Observation in the meal environment where applicable
Daily food item specification					
A hot cereal such as rolled oats and 3 other variety of dry cereals	1 hot 3 dry	1		13	In the meal environment 100% of homes provided this – not written on the menu
Residents have at least two hot choices at the main meal	2 hot choices	8	6		Only 57% of menus provided at least two choices for hot meals
Each hot main choice provides 1 serve of meat, chicken, fish or eggs	1/hot meal choice	14			100%
Red meat is included on the menu at least once a day	1 serve	9	5		
The hot light meal choice provides 1 serve meat, chicken, fish or eggs	1 serve	8	6		One home only served soup as the hot meal
Salad includes 1 serve of protein as meat, chicken, fish, egg	1 per day	2		4	8 homes did not serve a salad as part of the evening meal
Sandwiches include a serve of protein meat, chicken, fish, egg	1 serve	3		7	4 homes did not serve a sandwiches for the evening meal
High calorie mid-meal are always offered		3	3	8	The vitamised/puree sometimes only got a drink and drinks were not written on the menu
Menu provides four serves of bread, cereals, rice or pasta per day	4 serves	8	2	4	Breakfast missing made this difficult to tell on the menu. However, on observation all homes provided 4 serves a day
Menu provides 4 serves of vegetables per day Salad one Vegetable soup one Three other vegetable on the menu	4 serves	11	3		Quite a few homes did not offer salad at all as part of their menus and often the evening meal was a snack type light option The vitamised/puree meal had far more chance of this being achieved as vegetables served twice a day
Menu provides 2 serves of fruit per day	2 serves	3		11	Homes all offered fruit throughout the day, but did not specify this on their menu
100% fruit juice	100% 1 serve	2		12	Home did offer fruit juice, but failed to write in on the menu

Menu offered at least four serve of dairy foods such as milk, custard, yogurt and cheese daily	4 serves			14	Homes did offer at least 4 serves but failed to indicate this on the menu. Sandwich and salad often had cheese the menu had no information to indicate this
Menu item specifications					
Hot breakfast choice include protein sources (eggs, bacon, mince, cheese, baked beans	Protein source	5	2	7	On observation not all homes did this as spaghetti and cream corn were served
If only continental breakfast is served, as protein source such as yogurt, cheese or peanut butter is offered	Protein source	2	1	8	3 menu did not provide enough information Some homes did not provide protein source at all
Bread at main meals is on the menu	Yes/No		14		It was observed that if a resident wanted bread with a meal it was provided, but most time this was not present especially for the lunch time meal
Milk drinks are offered with all main meals and mid-meals	Yes/No	1	13		Milk was not always available for the main meals, it was sometimes available on the mid-meal snack trolley
If a desert is low in calcium (125ml of custard, ice cream or yogurt is added)	Yes/no		14		This did not occur and would require specific menu planning to ensure that this happened
A dessert is served with the main meal	Yes/no	13	1		One home served only fruit for lunch
A dessert is served with a light meal	Yes/no	9	5		Some homes only served fruit for evening meal One home only served vitamised/puree at evening dessert
Residents can choose more than one from hot meal, soup, salad, sandwich	More than one	12	1	1	
Soups are substantial, thick creamy soups, vegetable contain barley, legumes or meat	Substantial at least 50% of the time	13		1	Some homes used powdered soups mixes only
Salad as a main meal include a serve of meat, chicken, fish or eggs	Yes/No		14		No home served salads as a main meal during observations
Dietary item food specification					
High fibre bread (multigrain, wholemeal or white high fibre are offered	Offered	3		11	There was not enough information on the menu On observation homes did supply high fibre options
High fibre breakfast cereals included at breakfast time	Offered			11	3 there was not enough information on the menu On observation homes did supply high fibre options
Calcium rich milk based dessert offered twice a day	Twice a day		4	10	Some menus did not provide enough information Home did not always accomplish this with their menu planning – fruit, use of cream. And again this would need to have some specific menu planning to make this happen

*selected as most recent tool available

6.5 DISCUSSION

This discussion incorporates the feedback regarding how the meal environment system functions from the observational data collected. The goal of the meal environment is to ensure that the system is fully operational and all aspects come together during meal services to enable residents to consume adequate food and fluid. From this small sample size, the observational data would suggest that there were some functional issues within the meal environment system.

6.5.1 Menu in the meal environment

The same issues surrounding the lack of written menu information continued into study four. Table 6.34 highlights how the written menu was at times not followed. Serving errors during the actual meal service indicated production and meal delivery system impacts. All homes with serving errors had the capacity to rectify them and in some instances did. Poorly followed menus and uncorrected serving errors can impact upon the residents and their food intake. Little research could be found regarding this. The menu is a key communication tool describing what is to be served (Traster, 2013). Table 6.34 shows that no home informed residents regarding menu changes and table 6.25 highlights that often homes did not have a printed copy of the menu or a menu board indicating the day's meals for residents to read. The point of menu planning is a control mechanism that helps to keep a home meal service efficient and functional (Traster, 2013), avoid disappointing residents, avoid repetition and therefore reduction of variety. Problems associated with the menu stem from the lack of skill on the part of foodservices in designing menus (Shultz et al, 2005). Meals need to be presented well and mistake free, as poor nutrition is not caused solely by the menu itself, it needs to be executed properly (Racho, 2010) within the meal environment. Table 6.36 highlights an example from meal environments where the soup menu was not followed and the changes were not communicated to residents. The production system was impacted by staff not following the menu and increased repetition within the week which reduced the soup variety to residents.

Table 6.38 Photographic example demonstrated menu changes from what was written to what was observed

Menu	Tuesday	Wednesday	Thursday	Friday
Week one menu plan	Beef and vegetable	Chicken noodle	Thick pumpkin	Minestrone
Soup served On day Meal environment 4 5 6 7 (NSW)	Photo 6.1 Tomato and onion 	Photo 6.2 Cream of chicken 	Photo 6.3 Vegetable 	Photo 6.4 Tomato and onion 

6.5.2 Input

Staffing is essential to the meal environment system to ensure that residents receive support to consume enough food and fluids (Crogan & Shultz, 2000; ADA Report 2005; Dyck, 2006). Table 6.10 indicated that staffing levels were higher for the morning shifts and they decreased for the afternoon and evening meal times which is a similar finding to Kayser-Jones 2000 (Kayser-Jones, 2000). The eating assistance across all care levels was on average 26% however, this rose to 44% for residents in high care. Table 2.1 shows studies which had similar figures. High care residents were more likely to be identified as poorer eaters requiring assistance (Andrews, 2003).

Studies have found that on average it takes between 20 to 40 minutes to adequately support a resident to consume their meal, especially in high care (Kayser-Jones, 1997; Simmons et al, 2002). From table 6.18 there was adequate time available during meal services. The staffing ratio for high care for the evening meal was 7.6 which is higher than the 5.3 indicated by the study of Simmons et al, 2002 to ensure sufficient quality of care (Carrier, et al, 2009). The level of assistance residents required has increased. The description of "time thrift" for meal allocation and consumption in as short a time as possible is common in many nursing homes (Pearson & Fitzgerald, 2003). While this study cannot draw a parallel between staffing and eating assistance, the meal and fluid consumption data from table 6.32 and 6.33 highlights all care levels have some high non-consumption of food but mostly high care. Since Australian Aged Care Standards do not have a bench mark or any guidelines for reporting poor food intake, homes are not guided with respect to high non-consumptions of food or when to report it. In comparison the American MDS system it is reportable when a resident eats less than 75% of food intake action must be take (MDS- RCA Training Manual, 2004).

Study one indicated that dietitians in aged care foodservices were a required service. Table 6.10 showed that 64% (n=36) of aged care homes did not engage a dietitian and 58% did not have their menu reviewed by a dietitian yearly. Dietitians are the nutrition experts for Australia and across these two studies the evidence suggests that aged care homes are not utilising them. Ontario and USA standards have specified dietetic involvement but this is not the case in Australia. There is evidence from this study that system inputs such as portion size, standard recipes and nutrition support are not being used to support the menu or are poorly understood in terms of how to use them within the meal environment.

6.5.2.1 Portion size

An essential part of menu planning is to ensure adequate portion size in meal production and recipe development (Gregoire, 2013). Having the equipment when service is undertaken is essential to do this otherwise it is just guessing. Table 6.12 showed that all homes had a written portion size specification. Most failed to use portion size serving equipment but did offer different meal sizes, usually estimated by food put on the plate. Some of the serving errors from table 6.34 included the wrong meal size (often too much food) and this can reduce residents intake as the meal is overwhelming (Kayser-Jones, 1997).Table 6.31 further examined portion size and showed that from the actual serve sizes provided to residents it was quite often 50% below the stated reference range. This does not mean that residents were not being provided with enough food. However, some of the general menu portion sizes measured were very small and some for the vitamised/puree were equivalent to 1 tablespoon of food as shown in photo 7.9, 7.21 & 7.22 chapter seven). This observation does raise some concerns for nutritional consequence as sustaining an adequate level of food intake of the elderly is difficult for small eaters due to weight loss and protein and energy malnutrition (Levinson, Dwolatzky, Epstein, Adler, & Epstein, 2005; Desai, Winter, & Young, 2007). Some of the portion sizes were under 30g which is a tablespoon of food. Smaller portions to provide adequate nutrition required fortification or increased energy and protein density. Small portion sizes is an appropriate strategy for small food eaters provided it is adequately fortified. Using "First food" into residents' meal planning is consistent with current trends of "person centred" care (Castellanos et al , 2009). The results from this study highlighted that many homes did not fortify there foods.

6.5.2.2 Choice

The choices the menu supplied centred on an alternative for the main lunch meal and choices for the evening meal. Again in the meal environment residents were selecting menu items days in advance as shown by table. 6.13 . Choice has already been discussed in previous studies but the importance of choice for residents to have control over their food intake (West Ouellet & Ouellettel, 2003; Evans et al, 2005, Wright et al, 2011) enhances the uptake of food (Desai et al, 2007) and reducing the time-lapse between ordering and consumption of meal (Wright et al, 2011) is important for the success of the menu in the meal environment.

6.5.2.3 Menu support strategies

Nutrition support strategies such as supplementation form a very important part of bridging the gap, supporting the menu in aged care homes or for poor food intake (Marra & Wellman, 2008) but should not be used to replace food (Kayser-Jones 2006). The observed data indicated that

supplements were used as part of this support process across all meals as shown by table 6.11. However the plate waste data from tables 6.26 to 6.28 suggests that while they are provided to residents, as much as 50% was not consumed.

Use of fortification was only undertaken by a few homes in the way of butter knobs on food, cream and skim milk powder used on cereals as shown by photos 6.5 - 6.7. Food fortification may be a more suitable strategy to improve food intake. Providing foods that are fortified and indistinguishable from the unfortified meal would provide a useful way to optimise dietary intake (Dunne & Dahl 2007). However as already discussed little fortification was undertaken to support the menu.

Photo 6.5 Food fortification with butter Meal Environment 22 (SA)

Photo 6.6 Food fortification with cream Meal Environment 28 (NSW)

Photo 6.7 Food fortification with milk powder Meal Environment 4 (NSW)

Additional foods was not a practice observed in the meal environment as a nutritional intervention. Asking residents if they would like seconds or additional foods may be an inexpensive and effective nutritional strategy (Chernoff, 1994). This can only occur if the meal delivery system is set up to enable this and 50% of homes had tray services. Regardless of the menu nutrition support strategy used, the primary reason for their inclusion is to help residents who have a reduced intake (Berner, et al, 2002), weight loss (Chernoff, 1994) and to treat and prevent malnutrition (Beck et al, 2008). The reasons why nutrition strategies are not consumed has been acknowledged in the research due to a lack of eating assistance (Schell et al, 1999; Crogan & Evans, 2001) reduced intake or appetite (Kayser-Jones 2006; Beck, et al, 2010; Ducak & Keller, 2011), cognitive impairment (Buckler, et al, 1994) and taste fatigue of the supplements (Gall et al 1998; Fabian, 2001; Gosney, 2003). Food is such an important part of life for residents in aged care homes, therefore it is important to maintain menu support strategies which utilise food (Chernoff, 1994)

6.6.3 Transformation

6.6.3.1 Tray meal services

Tray services were predominantly in high care as shown by table 6.15. Table 6.32 shows that more food waste was observed when the meal delivery system was a tray. While this study cannot

generalise regarding the link between the high plate waste and tray meal system, table 2.7 does outline other studies which demonstrate a similar outcome. Meal location in table 6.19 shows that the majority of high care residents had their meals in their bed rooms (this figure increased at the evening meal), and observations were made that residents in these environments, at times, had all three meals in their rooms. The design of food service meal delivery systems which from the literature demonstrates a higher plate waste, to residents who are predominately more bed bound and having more meals in their rooms is a recipe for continual poor food consumption. Whole trays of food may also be overwhelming to residents therefore, reducing food intake (Cluskey & Dunton, 1999). Photos 6.8 - 6.10 show example of whole trays of food which have been partially or totally uneaten by residents. This could suggest that resident intake needs to be more carefully monitored.

Photo 6.8 Uneaten tray example one Meal Environment 17 (SA)

Photo 6.9 Uneaten tray example two Meal Environment 18 (SA)

Photo 6.10 Uneaten tray example three Meal Environment 22 (SA)

While acknowledging that there may have been clinical reasons why residents did not eat their meals, it was observed that this was a regular occurrence when tray meal services were in use across the meal environment.

Tray meal services also reduce the opportunity for residents to change their minds, do not allow for portion size of meals to be adjusted or for additional food to be offered. Tray meal services impact upon the menu being able to provide additional support as once the tray has been made up the meal is set. Tray meal services therefore have a negative impact within the meal environment in support of the delivery of the menu.

6.5.3.2 Temperature of meals

The temperature of the meal is critical for resident satisfaction (Shultz et al, 2005; Wright et al, 2011). Table 6.16 clearly shows that often over the course of the day residents were getting cold meals. Cold meals were received for a number of reasons as shown by photos 6.11 - 6.12. Poor fitting thermal support, food being left plated on the counter and waiting to be fed to residents and

cold foods such as ice cream as shown in photo 6.13, where the resident was served the ice cream melted. This is also the same photo of the ice cream not eaten by the resident highlighting the importance of the meal delivery system and its support of food intake.

Photo 6.11 Thermal support dome and base meal Environment 16 (SA)

Photo 6.12 Food left on trolley meal Environment 23 (SA)

Photo 6.13 Ice cream left on bench to melt before going to resident meal Environment 24 (SA)

6.5.3.3 Dining room in the meal environment

The dining room is the heart of the home (de Castro & Stroebele, 2002) and the place residents go to enjoy their meal (Palacios-Ceria, Losa-Iglesias, Cachon-Perez, Gomez-Perez, Gomez-Calero & Fernandez-di-las-Penras, et al, 2012). Certain aspects of the observed dining rooms detracted from the home feel. Table 6.17, 6.23, 6.24 and 6.25 outline the observations made regarding how dining rooms were functioning. Tables were not often served together, clearing up of the dining room was disruptive, there was very little smell of food, and often the tableware set up with untidy place settings dirty table clothes as shown in photos 6.13 - 6.15. The aroma of food was unable to be delivered into 86% of dining rooms. Food aroma is essential to any home to stimulate resident's appetite and improve food intake (Strobele & de Castro, 2004; Edward & Gustafsson, 2008). The meals delivery system and the physical environment need to be appropriate for residents to enjoy the meal (Mathey, et al, 2001). The table setting, tablecloths, centrepieces and tableware help to enhance the whole meal experience (Speroff, et al, 2005). Only 17% of dining rooms used music and this again is an essential aspect to enhance the meal experience (Speroff, et al, 2005) and may influence food intake (Crogan, et al, 2001).

Photo 6.14 Untidy table Meal Environment 12 (SA)

Photo 6.15 Dirty table cloth Meal Environment 7 (NSW)

Photo 6.16 Untidy table Meal Environment 11 (NSW)

As so many residents were having their meal service on trays, this system was also assessed for its ability to create a sense of home. A tray should be set to resemble a table and the observations regarding this are found in table 6.25. Photos 6.17 - 6.27 show how this part of the system struggled to be maintained and the sheer volume of residents utilising a tray system made this part of the meal delivery system labour intensive.

Photo 6.17 Poor tray set up example one Meal Environment 10 (NSW)

Photo 6.18 Poor tray set up example two Meal Environment 19 (SA)

Photo 6.19 Poor tray set up example three Meal Environment 21 (SA)

6.5.3.4 Monitoring and residents assistance in the dining room

During this study some residents required assistance to eat and that meal consumption data was quite low. Table 6.21 outlines the level of supervision, monitoring and assistance provided. Meal times are important to residents to ensure that they eat and drink enough food (Mathey, et al, 2001; Gibbons & Henry, 2005). Staff going to meal breaks during meal times is not acceptable practice and could contribute to poor food intake as there are less staff on the floor to assist. One of the key areas of ensuring enough food and fluid is consumed is to monitor the dining room. No dining room had a position to ensure co-ordination and the monitoring of residents on supplements, thickened fluids or a texture modified meal. There was no observed evidence that residents had food intake records which were completed at meal times. Without accurate monitoring of food intake this does not allow the menu to be adapted to optimise nutritional care for residents (Evans, et al, 2005).

6.5.3.5 Dignity in the dining room

The dignity of residents in the dining room is very important to enable them to feel comfortable at meal times. Table 6.22 outlines some of the observations made within the meal environment, including staff seated to feed; practise of asking residents before meals are taken away, allowing residents to see a meal before it is cut up, poor service of meal courses and poor feeding practises. Staff seated to feed residents often increases resident interaction than standing and feeding residents

(Pearson & Fitzgerald, 2003). Meal services can be at risk of become very task orientated often omitting important elements of care such as speaking to residents while feeding them (Crogan, et al, 2001).Staffing levels are very important to ensure that meal services remain enjoyable and not become an arduous task for staff (Kayser-Jones, 1997).

Staff interacting with residents is essential for creating a pleasant dining room experience and encouraging food intake. There are many reasons why nursing home residents do not interact with staff, such as pain, nausea, depression and fatigue. In some cases it takes a lot of effort to eat and therefore conversation is limited (Sidenvall & Fjellstrom, 1996). The observed level of interaction was dependent on the resident and how responsive they were, however, it also depended on the engagement by staff and the effort they put in (Pearson, et al, 2003). The dining room is a complex environment to seat individual residents, eg one reason cited for a resident eating in their room was due to disability or eating embarrassment (Pearson, et al, 2003). Other practises such as feeding more than one resident at a time, staff interrupting other staff during meal services and poor feeding practices of how food is put into a residents' mouth. The literature does suggest that care staff do not think that foodservice is part of their duties and as a task should be completed as quickly as possible (Hotaling, 1990; Pearson, et al, 2003).

6.5.4 Information system

The dietary information system was standard practice across all homes with information collected upon admission. Every home had a system in place to communicate menu changes to foodservices. The time it took to translate menu preferences and dietary changes varied between homes as shown in table 6.23. Time is the key factor for the information system to support the menu and drawn out time frames meant that the menu was not changed for residents and could translate into wrong food items provided. Another important aspect of the information system is to prime the production system and offer choice. Residents often forget what they choose if the menu ordering system is not close to the point of service. Two of the most interesting observations in the meal environment for the bulk evening meal service was resident's forgetting what they ordered or looking at another resident's meal and changing their mind. Only two breakfast services used self-service where residents had the ability to help themselves to breakfast.

6.5.5 Outputs and functionality of the system

The menu performance in the meal environment is demonstrated by Table 6.35 utilising Tool One to analyse the difference between written menu compliance and observational compliance. When the meal environment was observed using Tool One only slightly more compliance was found. Therefore, indicating that Tool One design still did not provide a platform to support menu planning

and design. However, it also added to the argument that the written menu continues to be a major factor in providing enough written information for any analysis to be undertaken. This aspect highlights that a lot of the statements within this tool were not relevant not because they are not important but would require considerable education and support to make them part of practice. As discussed in chapter five, for any standard/guidelines to become part of practice requires some support from the system controlling service delivery, the Aged Care Standards.

This is a large system and its functionality depends on the system working together. This study cannot say that directly some of these findings lead to poor nutritional and resident outcomes. All homes partaking in this study did have three years accreditation. However, it does highlight how easy and vulnerable this system is and that it requires management by people with system knowledge, dietetic input and written menus which convey appropriate information.

6.6 CONCLUSION

This study observed the meal environment exploring factors that impact on the delivery of the menu within the system. The data collected identifies firstly, the direct system impacts on the menu, and secondly how the quality of the service in turn impacts on the menu.

It was noted in the literature review (chapter two) that the menu must be supported by other system components, and this is confirmed by this study. This study indicated that within the meal environment, issues with the system functionality included:

- Cold meals (meal delivery system)
- Dining room dignity (dining room co-ordination, staff understanding the dining room)
- Staffing ratios
- Presentation of meals
- High use of tray services (which are not home like)
- Location of meal service with a high number of residents in their rooms for meal (often all three meals)
- Dining room set up and cleanness (tables and trays)
- Lack of menu information on display to residents
- Menu changes without informing residents

The system to support the menu success and the quality of the service are equally important in ensuring that the menu available delivers nutritional care. Quality aspects of the service which were highlighted from this study include:

- Menu mistakes which at times were observed not to be corrected
- Serving errors in the dining room and with meals
- Meal consumption data highlights issues with the quality of feeding of residents

- Plate waste could highlight menus which are poorly planned and lack of supervision provided to monitor residents food intake
- Portion size data which was specified and not followed by homes

Using Tool One highlighted the relevance of guideline development, as it demonstrates that there was little difference between when the tool was used to assess a written menu and actual observations in the meal environment. Resulting in the tool compliance remaining quite low. This data suggests that guideline development requires care to ensure relevance while being valid in the aged care sector.

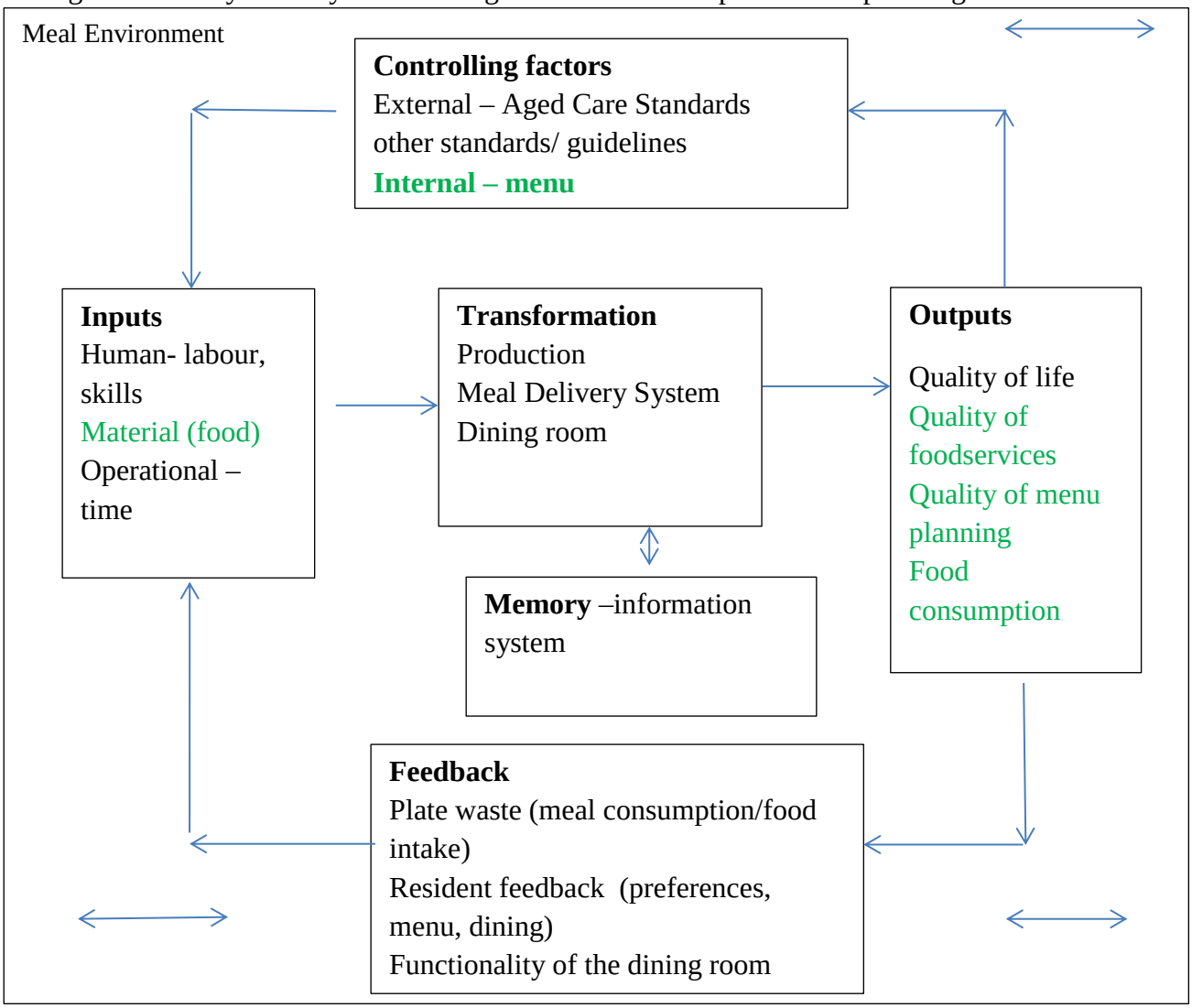
Study six further investigates the Aged Care Standards in relation to these findings, but these results do highlight that system issues were occurring in the meal environment and these were having an impact upon the way the menus were functioning. One of the most important factors to consider here is that while we are discussing a system, this system directly provides nutritional care for residents. No measures of resident satisfaction were taken nor nutritional analysis observed in this study. A system can only be efficient when all parts work together. The observed plate waste and meal consumption data demonstrates major system concerns. It is also important that every meal occasion be correct, each and every time. If a resident received a cold meal, wrong meal, wrong meal size, does not get enough support, poor meal presentation etc then this could seriously impact on food and fluid intake and directly affect nutritional status. Residents in aged care homes are already compromised in their physical, psychological and social health. Therefore this places more importance on the meal environment system which needs to be functional.

CHAPTER SEVEN - STUDY FIVE -VITAMISED/PUREE MENU PLANNING, VARIETY, CHOICE AND REPETITION

7.0 OVERVIEW

The vitamised/puree menu planning has never been studied to this degree in residential aged care homes. This study draws information collected from the first four studies and undertakes further analysis to explore the quality of vitamised/puree menu planning within the meal environment, utilising the system framework in figure 7.1. Objective 1.5.2 was met indicating that the quality of menu planning for the vitamised/puree menu is further reduced.

Figure 7.1 Study five - system investigation of vitamised/puree menu planning



Adapted from Vaden 1980

7.1 DESIGN

A case study was undertaken to examine the vitamised/puree menu, utilising data from study one to study four. The case study examined menu planning and the meal environment system for written information, food variety, choice, menu repetition (chapter four), portion size (chapters three and seven), meal consumption and vitamised/puree menu in the meal environment (chapter seven). The vitamised/puree meal is the most extreme degree of texture modification which is required to assist residents to safely swallow. The group (residents) have a shared identity, expectation and interact in close ways which make for a unique case study (Burns, 2000).

7.2 RESULTS

7.2.1 Results from study two (chapter four) and study four (chapter six) - written information on menus

Table 7.1 outlines the amount of menu information provided on the vitamised/puree textured modified meals from the National Menu Audit and Table 7.2 outlines the written information from the menus collected for the meal environment study. The percentage of menus with written information is low across the menu pattern for study two and for study four slightly higher from a smaller sample. Observationally one home did undertake a vitamised/puree salad as shown in photo 7.20.

Table 7.1 Menu written information from Study Two use

Meal components n = 161**	Number of menus with written information (no written information on menu)	Percentage % (% not written on menu)
Breakfast	3 (158)	2 (98)
Morning tea	6 (155)	4 (96)
Lunch	20 (141)	12 (88)
Lunch vegetables	6 (155)	4 (96)
Lunch Dessert	10 (151)	6 (94)
Afternoon tea	6 (155)	4 (96)
Soup *	Not written on menu	-----
Hot entrée	17 (144)	11 (89)
Evening dessert	8 (153)	5 (95)
Supper	Not measured	
Salads	No indication of puree salads	
Sandwiches	Not provided	

*soup is generally vitamised from the general menu

** 161 menus from the National Menu Survey

Table 7.2 Menu written information from observational Study Four

Menu pattern component n=14 menus	Vitamised/puree menu Written information (%)	
	Yes	No
Breakfast	3 (21)	11 (79)
Morning tea	3 (21)	11 (79)
Lunch	7 (50)	7 (50)
Vegetables	Not specified	
Lunch dessert	7 (50)	7 (50)
Afternoon tea	3 (21)	11 (79)
Evening meal (hot meal)	7 (50)	7 (50)
Evening meal dessert	7 (50)	7 (50)
Soup*	14 (100)	
Salads	Nothing written	
Sandwiches	Not provided to residents	
Supper	0	36 (100)

7.2.2. Food variety for the vitamised/puree menu

Table 7.3 outlines the food variety comparing the general menu and vitamised meals across the menu pattern. From Study Two the percentage variety was only 27% compared to the general menu. For study four the menu variety increased to 46%. Upon observing the meal environment, menu variety increased to 58% indicating that more foods were offered than were written on the menu. Overall the menu variety was 40% less than what was offered on the general menu.

Table 7.3 Food variety Study Two and Four

Menu Pattern	Number of variety of vitamised meals**	Number of variety of meals served general menu**	Number of variety of vitamised meals**	Number of variety of meals served general menu**	Number of variety of vitamised meals observed*	Number of variety of meals served general menu observed *
	Study Two n= 4620 menu days		Study Four n=434 menu days		Study Four (observational) n= 36 menu days	
Breakfast	11	40	Nothing written		3	8
Morning tea	21	135	5	65	9	15
Lunch						
Main meal	62	259	40	118	12	31
Vegetables	17	67	23	35	12	22
Desserts	46	275	59	111	12	30
Afternoon tea	23	98	6	18	8	2
Evening meal						
Soup						
Hot entrée	138	138	62	62	26	26
Dessert	61	276	39	102	11	25
	22	163	29	67	7	15
Supper	1	5	0	0	3	5
Total	402	1456	263	578	103	179

*total number of foods observed in the meal environment

**written information from menus

7.2.3 Choice provided for the vitamised/puree menu

Tables 7.4 to 7.8 indicate that there was little choice provided to those on a vitamised/puree menu from Study Four. There was no choice provided to residents on a vitamised/puree meal from the National Menu Survey (Study Two) across the menu pattern (100%). Table 7.4 shows that two types of cereals and scrambled eggs were the hot breakfast choices offered the most. The vitamised/puree menu has reduced choices due to the nature of not being able to swallow items such as toast or toast being used within meal preparation.

Table 7.4 Breakfast choices available for vitamised/puree meals

Breakfast meal components n=30*	Vitamised/puree menu	
	Options	Frequency/percentage
Cereal	Porridge only Weetbix only Both Weetbix and porridge served	14 (46) 8 (27) 8 (27)
Fruit	Puree prunes Puree fruit Both puree fruit puree prunes No fruit served	6 (20) 9 (30) 12 (40) 3 (10)
Yogurt	Served Not served	25 (83) 5 (17)
Juice	Juice	30 (100)
Toast	Not served	
Hot breakfast	Scrambled egg Baked beans Mushrooms No hot breakfast	6 (20) 1 (3) 1 (3) 22 (74)

*There were 36 meal environments but only 30 served vitamised/puree meals

Table 7.5 shows that similar foods were offered for the vitamised morning and afternoon tea and supper. There were times when only a drink was offered as the mid-meal snack on the vitamised menu (33%) for morning tea, 42% for afternoon tea and 89% for supper.

Table 7.5 Mid meal choices available vitamised/puree meals

Vitamised/puree Morning team n=30		Vitamise/puree Afternoon tea		Vitamised/puree Supper	
Options	Frequency/ percentage	Options	Frequency percentage	Options	Frequency percentage
One choice	30 (100)	One choice	30 (100)	One choice	30 (100)
Yogurt	5 (18)	Yogurt	5 (18)	Custard	2 (7)
Custard	2 (7)	Custard	2 (7)	Fruit	1 (3)
Fruit & custard	1 (3)	Puree fruit	2 (7)	Mousse	1 (3)
Mousses	2 (7)	Mousses	4 (13)	No food only a drink*	26 (87)
Puree fruit	1 (3)	Cake	1 (3)		
Vitamised cake	3 (10)	Pudding	1 (3)		
Pudding(supplement)	3 (10)	(supplement)	1 (3)		
Scone	1 (3)	Scone			
Soaked biscuit	1 (3)	Soaked biscuit	1 (3)		
No food only a drink*	11 (37)	No food drink*	13(43)		

* Cup of tea, juice, cordial, milk drink

Table 7.6 outlines the lunch and evening meal choices and the variety of foods offered. Only one type of potato was offered to residents, (mashed potato), with no flavourings or variations. The evening meal consists of soups, hot meal and dessert which were the common meal for vitamised/puree.

Table 7.6 Lunch and evening meal choices available vitamised/puree meals

Lunch component n=30	Vitamised/puree menu		Evening meal component	Vitamised/puree menu	
	Options	Frequency (percentage)		Option	Frequency (percentage)
Choice options	One meal option	30 (100)	Choice options	2 choices 3 choices	1 (3) 29 (97)
Lunch meat	Beef Chicken Lamb Pork Fish	13 (43) 5 (17) 6 (20) 3 (10) 3 (10)	Evening meal meat	Beef Chicken Lamb Pork Fish Vegetarian	13 (44) 5 (16) 5 (16) 2 (7) 2 (7) 3 (10)
Lunch vegetable one	Potato mashed	30 (100)	Evening meal vegetable one	Potato mash No potato	27 (90) 3 (10)
Lunch vegetable Two	Pumpkin Carrot Sweet potato Beetroot Corn Spinach Cabbage	12 (41) 11 (37) 3 (10) 1 (3) 1 (3) 1 (3) 1 (3)	Evening meal vegetable two	Peas Beans Carrot Cauliflower Pumpkin Sweet potato Mixed vegetables Broccoli	4 (13) 3 (10) 10 (33) 2 (7) 7 (24) 1 (3) 2 (7) 1 (3)
Lunch vegetable three	Peas Beans Broccoli Spinach Tomato	14 (48) 13 (43) 1 (3) 1 (3) 1 (3)	Evening meal vegetable three	Broccoli Peas Beans Mixed vegetables No third vegetable offered	1 (3) 15 (50) 10 (33) 1 (3) 3 (10)

Table 7.7 outlines the dessert choices for both lunch and the evening meal, and there was only one choice offered for both meals. Slightly more variety of dessert items was offered at the evening meal than lunch. The foods for both meals are quite similar. At least some homes allowed ice cream and jelly to be residents on vitamised/puree foods. There seemed to some confusion with menu planning allowing these foods as part of this texture modification meal as shown in table 7.11.

Table 7.7 Dessert choices available vitamised/puree meals

Dessert component n=30	Vitamised/puree menu	Frequency (%)
Level of choice options lunch	One choice	100%
Level of choice options evening meal	One choice	100%
Lunch	Fruit and custard	10 (33)
	Pudding	5 (17)
	Jelly cake	4 (13)
	Mousse	4 (13)
	Fruit and yogurt	2 (7)
	Cake & custard	2 (7)
	Custard	2 (7)
	Yogurt	1 (3)
Evening dessert	Yogurt	7 (23)
	Fruit & custard	3 (10)
	Mousse	6 (20)
	Baked custard	3 (10)
	Ice cream	3 (10)
	Fruit & yogurt	2 (7)
	Puree fruit	2 (7)
	Jelly & fruit	2 (7)
	Custard	1 (3)
	Cake & custard	1 (3)

7.2.4 Repetition in vitamised/puree menu planning

The greatest repetition was seen between weeks on different days. The lunch hot meal (27%) and hot evening meal (38%) were the two meal components which were the least repetitive. Repetition between weeks on the same day was 52% for morning tea and 44% for evening meal dessert. This indicates that the menu often served the same types of foods on consecutive weeks on the same day. The repetition which indicates the most reduced variety is repetition within the same week. The vitamised/puree menu had high values for hot breakfast (43%), morning tea (26%), lunch dessert (51%) and evening dessert (53%). There is no reference value for repetition but the higher the percentage indicates that foods are continually repeated which reduces the variety on the menu.

Table 7.8 Repetition from Study Two vitamised/puree menu

Menu pattern n=161	Menu repetition within week (%)	Foods	Menu repetition same day different weeks (%)	Foods	Menu repetition different days consecutive weeks (%)	Foods
Hot Breakfast N=76	43	Scrambled eggs	31	Scrambled eggs	69	Scrambled eggs
Morning tea N= 75	26	Yogurt	52	Yogurt	78	Yogurt
Afternoon tea N=62	15	Yogurt mousse	34	Yogurt mousse	736	Yogurt Mousse
Lunch N= 161	20	Beef Mashed potato	20	Beef Mashed potato	27	Beef & Mashed potato
Evening hot meal N=150	17	Beef Mashed potato	15	Beef Mashed potato	38	Beef & Mashed potato
Lunch dessert N=158	51	Fruit and custard	31	Fruit and custard	74	Fruit and custard
Evening dessert N=108	53	Fruit and yogurt Mousse	44	Fruit and yogurt Mousse	74	Fruit and yogurt Mousse

7.2.5 Portion size

Table 7.9 outlines the analysis examining the portion size specification stated in the home foodservice manuals compared to those observed in the meal environment at meal times. The actual portion size value ranges were inconsistent across all homes, and that is similar to the finding of study one and study three. The percentage of meals served for the vitamised/puree menus below the minimum range values that homes used was at times 90%. The general menu was also at times using a much smaller portion size then what was stated. It was unclear how homes determined their portion size values as shown in study four and there was no observation of equipment used to determine meal sizes.

Table 7.9 Portion size for the vitamised/puree menu (general menu for comparison)

Menu pattern n=30	Portion sizes	Vitamised	General	Vitamised n=30			General n=36		
	Range stated by homes documentation	Range Vitamised	Range general menu	Below %	Within %	Above %	Below %	Within %	Above %
				Vitamised/puree menu			General menu		
Porridge g	100-200		140-220				**53**	6	42
Tinned fruit g	100-120		30-120				**84**		6
Juice ml	100-200		75-200				**39**	19	42
Meat g	75-120	45-110	60-190	**93**		7	**31**	11	7
White vegetable g	80-90	55-100	45-130	**82**		18	**74**	6	21
Orange vegetable g	60-80	40-95	34-120	**93**		7	**69**	13	19
Green vegetable g	60-80	32-88	21-106	**93**		7	**75**	9	16
Dessert g	100-140	50-209	60-241	**75**	7	18	**57**		43
Soup ml	150-200		95-220	**52**	12	36	**52**	12	36
*Meat *(EM)Vit g*	75-120	35-110	--	**96**		4			
White vegetable g	80-90	35-96	--	**89**	4	7			
Orange vegetable g	60-80	21-100	--	**93**		7			
Green vegetable g	60-80	35-125	--	**93**		7			
Dessert g	100-140	60-200	--	**75**		25			

**evening meal vitamised/puree only*

7.2.6 Meal consumption data for vitamised/puree

Table 7.10 outlines the meal consumption data for the vitamised/puree menu and the results are using the MDS data of <75%. It shows that 44% of residents at lunch and 37% at the evening meal did not consume 75% of their food.

Table 7.10 Meal consumption by residents receiving meals vitamised/puree*

Meal	Lunch				Evening meal			
n=30	All eaten 25% not eaten	50% not eaten	75% not eaten	100% not eaten	All eaten 25% not eaten	50% not eaten	75% not eaten	100% not eaten
One	42	13	15	30	72	14	6	8
Two	49	25	5	21	57	16	4	23
three	57	38	5		51	32	7	10
Four	71	14	10	5	68	24	2	6
Five	67	5	7	21	65	13	6	16
Six	84	5	2	9	83	11	4	2
Seven	30	25	15	30	35	18	27	20
Eight	50	5		45	48	15		37
Nine	46	27	18	9	50	12	15	23
Ten	58		9	33	87		2	11
Eleven	68	19	7	6	65	21		14
Twelve	57	29		14	57	22	21	
Thirteen	73	17	3	7	89	11		
Fourteen	41	7	16	36	46	6	4	44
Total	793	229	112	226	873	215	98	214
Combined total	1400				1400			
Averages	57	16	8	19	63	15	7	15
MDS Guidelines	57	44 75% not eaten			63	37 75% not eaten		

*MDS 75 % of meals consumed

7.3.7 Meal organisation practices

Table 7.11 outlines how left overs are used to plan the menu for residents on vitamised/puree menus. No left overs were used to plan the general menu.

- The vitamised morning tea was never from the written menu and it was decided on the day which can lead to repetition
- Afternoon tea was, at times the same as morning tea snacks (11%) which is same day repetition
- The lunch menu showed that 25% of foods served were leftovers from the previous day
- The use of left overs increased further at the evening meal where 28% of food items served were leftover from the previous day and 25% of food left over from the lunch meal
- The desserts also have some similarity to the main meal though not as large with 18% of lunch dessert items being left over from the previous day.

Table 7.11 Meal and menu organisation practices for vitamised/puree meals compared with general meal

Menu pattern	Vitamised/puree menu n=30		General menu n=36	
	Source	Frequency (percentage)	Source	Frequency (percentage)
Breakfast	From the menu	30 (100)	From the menu	36 (100)
Morning tea (MT)	Not from the menu – made up on day	30 (100)	From the menu	36 (100)
Afternoon tea	Not from the menu	30 (100)	From the menu	36 (100)
Morning tea food the same as the afternoon tea	Yes No	23 (77) 7 (23)	Yes No	11 (31) 25 (69)
Lunch	Menu followed Not from the menu (on the day) Left over previous day	20 (67) 1 (3) 9 (30)	Menu followed	36 (100)
Menu deviation for lunch (meat)	No deviation from lunch meat Different meat Meat used from previous day	15 (50) 9 (30) 6 (20)	Menu followed	36 (100)
Mashed potato at both meals	Yes No	27 (90) 3 (10)		
Vegetable two Same for both meals	Yes No	13 (43) 17 (57)		
Vegetable three Same for both meals	Yes No	15 (50) 15 (50)		
Vegetables the same for both meals	Yes No	16 (53) 14 (47)	Yes No	5 (14) 31 (86)
Lunch dessert	Menu followed Different dessert Dessert left over previous day	11 (37) 12 (40) 7 (23)	Menu followed	36 (100)
Evening meal	Menu followed Different meal Meal left over previous day Meal leaf over from previous meal	11 (37) 7 (23) 7 (23) 5 (17)	Menu followed Different meal	34 (94) 2 (6)
Soup	Menu followed No soup	27 (90) 3 (10)	Menu followed	36 (100)
Evening dessert	From the menu Not from the menu (on the day) Lift over precious day Left over previous lunch meal	15 (50) 8 (27) 3 (10) 4 (13)	Menu followed	36 (100)
Ice cream offered as part of the menu	Yes No	5 (17) 25 (83)	Yes	36 (100)
Jelly offered as part of the menu	Yes No	7 (23) 23 (77)	Yes	36 (100)
Dessert same for both meals	Yes No	3 (10) 27 (90)	Yes No	 36 (100)
Menu planning was undertaken on the day	Yes No	27 (90) 3 (10)	Yes No	 36 (100)

7.3 DISCUSSION

These results paint an interesting picture regarding the quality of the vitamised/puree menu and how that translates into meals for residents. Regardless of diet type, all residents in homes should have access to the same quality of service provision. Though residents on a vitamised/puree meal form a smaller subgroup from the meal environments observed (n=30) with 15% of residents in this study, this figure is similar to figures of 15 to 20% of residents receiving a vitamised/puree meal as outlined in other studies (Cluskey, 1989; Hoteling, 1992). All homes observed had three years accreditation.

7.3.1 Menu planning

Study One first raised issues surrounding the general menu planning and the lack of written information on the menu and how this translated to the menu planning of the vitamised/puree meals. This case study demonstrates that the details in menu planning deteriorated further when planning meals for residents on vitamised/puree texture. Those that are on a vitamised/puree meal are nutritionally more vulnerable due to the nutrition dilution which is undertaken to make these meals (Hoteling, 1992; Germain, et al, 2006; Keller, et al, 2012). This study provides clear evidence that menu planning for vitamised/puree is seriously undermined and of a reduced quality. This is contradictory to the quality care principals stating that all services should be of the same quality to meet the needs of all (DoHA 2008).

Menu planning is compromised when there is a lack of written information. It reduces the menu's ability to communicate to residents or residents representatives regarding what is being served daily and reduces the capacity of the menu to be integrated. As Study Two showed, texture modified integration was not undertaken on 88% of menus, indicating a poor outline of what the menu is providing. Though it could be assumed that the general menu is followed, Table 7.11 shows that often this is not the case. Further reducing the menu communication is that no home actually wrote on the menu board what was being served for the vitamised/puree menu (Table 6.24). While again homes may assume that the general menu board information was sufficient, Table 7.11 showed that what was served for the general meal was the same as the vitamised/puree. What is served can be quite difficult to distinguish. No home utilised moulded foods which provide some food shape. Scoops are often difficult to distinguish as to what the meal components are, meals put into bowls and the use of gravy and sauces obscuring the meal further making it difficult to see as shown in the photos 7.1 – 7.4. From the above it is clearly evident that from the written menu into the meal environment, the communication was inadequate and meals often were not the same.

Photo 7.1 Smothered meal example one Meal Environment 31 (NSW)

Photo 7.2 Smothered meal example two Meal Environment 32 (NSW)

Photo 7.3 Smothered meal example three Meal Environment 29 (NSW)

Photo 7.4 Smothered meal example four Meal Environment 28 (NSW)

7.3.2 Variety of foods

Table 7.3 shows variety of foods measured over two studies. Overall the variety of food was less for residents receiving a vitamised/puree meal. The exception to this was soup when the general and the vitamised/puree meal were often the same. Using vegetables as an example, mashed potato was the only way potato was used in some meal environments and was offered twice a day. If this menu pattern continues and mashed potato usage is extrapolated over a year, then a resident on a vitamise/puree meal would have mashed potato seven hundred and thirty times a year. This is a reflective statement. The reader should consider what this would be like for a resident. The reduced variety was demonstrated by observation when practices such as the use of the same lunch and evening meal photos 7.5 & 7.6, same vegetables for both meals photos 7.7 & 7.8 and the same mid-meal snacks used repeatedly as shown below photos 7.9 - 7.12. The repetition data from table 7.8 further supports the reduced meal variety available to residents.

Photo 7.5 Same Lunch Meal Environment 23 (SA)

Photo 7.6 Same Evening Meal Meal Environment 23 (SA)

Photo 7.7 Lunch Meal Meal Environment 20 (SA)

Photo 7.8 Same vegetables Evening meal Meal Environment 20 (SA)
Scrambled eggs is the protein (changed the meat)

Photo 7.9 Mousse Meal Environment 12 (SA)

Photo 7.10 Mousse Meal Environment 10 (NSW)

Photo 7.11 Mousse Meal Environment 29 (NSW)

Photo 7.12 Mousse Meal Environment 30 (NSW)

Little could be found on food variety and its nutritional impact on the vitamised/puree meal. Studies have shown that nutrients such as energy, zinc, calcium, Vitamin D and Iron are compromised (Johnson, et al, 1995). The literature review indicated that residents on vitamised/puree meals are more nutritionally compromised (Wright, et al, 2005). Texture modified meals are also compromised in their production if water and broths are used (Keller, et al, 2012) and poor use of standard recipes to ensure consistent production (Cluskey 1989; Keller, et al, 2012). Photos 7.13 & 7.14 demonstrate a poor nutritional practice when the vitamised/puree meal was not served with any protein for the evening meal. The observation within the meal environment was that staff did not think meat was required the meat at the night meal.

Photo 7.13 No meat example one Meal environment 30 (NSW). Four vegetables only

Photo 7.14 No meat example two Meal environment 1 (NSW). Three vegetables only

7.3.3 Quality

One of the key quality aspects of menu planning within the home environment is to integrate the menu so that all residents receive the same meal. Residents receiving vitamised/puree meals like to be able to eat food that is the same as or looks similar to the items served to those consuming the general texture and menu planning should reflect this practice (Hoteling 1992). Photo 7.15 and 7.16 demonstrates inconsistent integration of the evening meal.

Photo 7.15 Evening meal no integrated General evening meal Sweet and sour chicken rice and vegetables. Meal Environment 27 (NSW)

Photo 7.16 Evening meal vitamised/puree meal no integrated from general menu – Meat, potato, peas. Meal Environment 27 (NSW)

The lack of food variety was also caused by homes utilising left overs. It was observed that homes generally were trying to do their best, and used production methods such as over production of meal items and using left overs to create these texture modified meals. Table 7.11 highlights observations of how menu planning was undertaken during production, that meals for the texture modified diets were decided before the meal service. Food items were put into containers as shown in photo 7.17 and meals put together with no menu plan used. No observation was made of residents being asked if they would like to eat left overs. This type of system also increased repetition as with no menu plan being followed, resident received what containers of food are available as to what residents received. This reduces the variety of food on offer, is a poor way to plan a menu and shows a lack of understanding, skills and education (Ullrich, et al, 2014).

Photo 7.17 Plastic containers of left over foods used to make up vitamised/puree meals Meal Environment 27 (NSW)

Menu planning the meal correctly is essential to support the presentation aspects and provide residents with meal which are visually appetising. Vitamised/puree foods can affect quality of life. Residents on this texture modification lose the pleasurable act of chewing and manipulating food. The food loses visual appeal, vibrancy in colour and foods become indistinguishable from each other (Cluskey, 1989, Hoteling, 1992; Keller, et al, 2012; Keller et al, 2014). The data on meal presentation (table 6.24) would suggest that homes did try to present and colour combine to enhance

the visual appeal. The practice of mixing all of the food together was observed in some of the meal environments as outlined in table 6.18 with lunch (27%) and evening meal (37%). Photos 7.18 and 7.19 demonstrate how poor colour combination, lack of consistent scoop and the smothering of gravy detract from the visual appeal. Photos 7.20 and 7.21 show how unappealing food looks when it is all mixed together, which was unfortunately observed in this study. Guidelines such as Digby and Bunney 2012 & 2004 (Tool 1& 5) specifically outlines how using bowls and consistency (food holding it shape) are essential for meal presentation. Tool 5 has been in circulation for ten years and observed practises as shown below are still continuing. The consistency of the production of vitamised/puree meals is difficult to achieve and may change from day to day if standard recipes are not used (Cluskey 1989).

Photo 7.18 example one poor presentation Meal Environment 35 (NSW)

Photo 7.19 Example two poor presentation

Meal Environment 5 (NSW)

Photo 7.20 example three puree salad Environment 36 (NSW)

Photo 7.21 Example four Chicken and vegetables blended together

Meal Environment 5 (NSW)

7.3.4 Choice

Choice provided to residents on vitamised/puree meals has been associated with poor meal choice options (Wright, et al, 2005). When examining the vitamised/puree meal menu there was no choice options anywhere along the menu pattern over the day. Even with the small sample size of thirty meal environments it was observed that no choice was offered to any resident. Unfortunately once a resident goes on a vitamised/puree meal they no longer have the same choice options as the general menu.

Food is an important factor for quality for most residents in areas where autonomy is limited and essential for maintaining some level of control within the meal environment (Ball, et al, 2000). There are no allowances made for any choice aspects of texture modification within the state based or general standards/guidelines . The expected outcomes only makes reference to texture being made available and preferences being taken into consideration. The above evidence would suggest that this is not the case and one could argue that the expected outcome is not compliant as

preferences are not taken into consideration at all. Here within lies the core issue with the standards and expected outcomes. They are outcome based and therefore open to interpretation by homes. Linking the meal environment to standards to support and provide the structure in which aged care homes should operate within to provide quality of care to residents on a vitamised/puree meal. There is evidence indicating that the more restricted food choice becomes the greater the risk to the resident's nutritional status (Matthews, 1992).

7.3.5 Portion size

What is of concern is the number of observed portion sizes which were below the minimum range values specified by homes. The range of portion sizes used were at times no more than a tablespoon of food (approximately 20 to 40g). The preparing of vitamised/puree meals especially meats and grain product that have a lower water content require the addition of fluids. The addition of fluids dilutes nutrients and therefore, often a larger portion size of food is needed to enable adequate nutrition intake (Keller, et al, 2012). Coupled with poor food fortification strategies observed from study four in which only 3% of homes used cream, butter or milk powder to fortify vitamised/puree meals. Could leave vitamised/puree meals nutritionally inadequate.

Photo 7.22 Example one Evening meal with meat and two vegetables – portion size 20-30g.
Meal Environment 19 (SA)

Photo 7.23 example two Lunch meal with meat and three vegetables – portion size 25 to 50g. Meal Environment 15 (SA)

7.3.6 Meal Consumption

The meal consumption data certainly highlights that a percentage of food was not being consumed and this may raise serious nutrition concerns. Photos 7.24 to 7.26 were just a few examples of tray meals which were partially or not consumed. Many other photos were taken of meals from dining rooms services which were also not consumed. It should be noted that these residents may have been unwell, however the amount of unconsumed food from table 7.10 cannot all be contributed to residents being unwell. This study did not undertake a nutritional analysis and this area warrants

further investigation. The vulnerability of this group is further compromised by the fact that the majority of residents were in high care and the meal delivery system to high care was predominantly by a tray meal service. Tray meal services have increased plate waste as shown by other studies in table 2.6. Poor intake can also be due to inadequate eating assistance or poor acceptance of texture modified meals leading to inadequate intake of nutrients and energy which could lead to malnutrition (Keller, et al, 2012). Other studies have highlighted that close supervision of food preparation, greater attention to staff feeding practices and staff ratios are required to support these residents with homes monitoring consumption closely (Johnson, et al, 1995). The expected outcome requires that residents on a texture modified meals be monitored. Data from table 6.2 would suggest in these meal environments that this is not the case.

Photo 7.24. Example one Meal Environment 17 (SA)

Photo 7.25 Example two Meal Environment 35 (NSW)

Photo 7.25 Example three Meal Environment 24 (SA)

Photo 7.26 Example four Breakfast Meal Environment 18 (SA)

7.3.7 Aged Care Standards

The current standards do not provide any safety net to ensure a consistent service standard. The statements below are pertaining to Aged Care Standards documentation:

- 4.8 Assessment and action on individual resident's preferences
- 4.8 Resident with special needs are identified and consulted on how those needs are to be

met

- 2.10 availability of dietary information for the development and review of menus to ensure residents' needs are met
- 2.10 menu planning includes a variety of food and fluid textures that are appropriate to residents needs
- The standard of catering services to be delivered eg choice, quality and quantity
- Monitoring
- No monitoring is undertaken from study four -

Very little is mentioned regarding texture modification in the Aged Care Standards and the lack of any statements has left homes open to interpret how this part of the menu planning occurs and the data speaks for itself in terms of the broad interpretation. The standard of service quality needs further investigation, there is no choice and the quality and quantity of food provided to residents is questionable. The observations made in the meal environment for meal planning was often planned prior to meal service and some of the photos above would support that view. The most disturbing aspects of these findings is the direct noncompliance of Standard 2.10 that menu planning includes a wide variety of food and fluid textures that are appropriate to the residents' needs and residents are monitored for their food and fluid intake.

Residential care homes are managing people in the last stage of their life, and this is where food is often the most important part of the day for numerous reasons. This case study really brings the meal environment system to the basic level and exposes major flaws with the aged care standards expected outcomes. Menus should focus on maximising flavour as texture modified meals do have reduced sensory quality, palatability and can have lower nutritional quality than general meals (Wright, et al, 2005). Residents on a texture modified meal often have reduced food intake and consequently are malnourished or dehydrated. The effects of the texture modified meal is heightened as the meal is unidentifiable. This is a serious issue where malnutrition rates are high as identified by table 2.5 and the palatability of the food may contribute to poor meal consumption (Wilson et al, 2000).

7.4 CONCLUSION

The data and photographic evidence highlights a serious issue in menu planning and the quality surrounding the preparation of these types of texture modified meals.

Study Five exposes a decline in menu planning practices that comes with texture modification, and highlights the resources which are needed to support homes. There needs to be defined standards which provide a minimum standard of menu planning, portion size, the need to fortify foods to support this texture modification and lastly that during meal service residents require more monitoring and assistance to ensure adequate food intake (Johnson, et al, 1995). The observational data suggests that often these meals are not planned, that left overs are used and that there is a reduced variety of foods. While it was beyond the scope of the study to undertake a nutritional analysis, any reduction in food variety will limit the range of nutrients available. This aspect of menu planning does requires more system support as residents on this type of texture modification are more vulnerable, and often frailer due to deterioration of their physical or cognitive health.

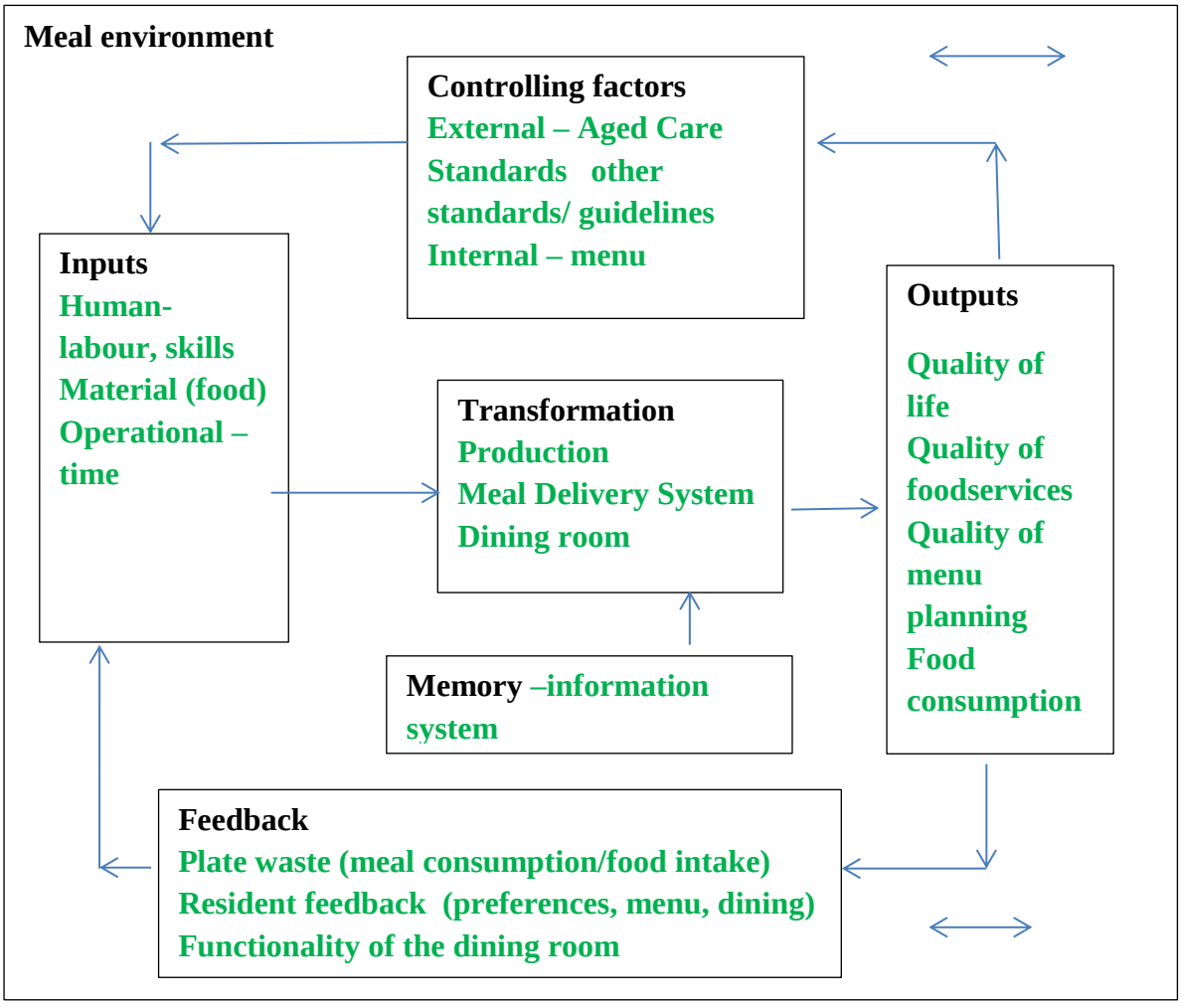
Study Six explores how homes are interpreting the expected outcomes of the Australian Aged Care Standards using system observations.

CHAPTER EIGHT – STUDY SIX - SURVEY, AUDIT AND OBSERVATIONAL ANALYSIS OF THE MEAL ENVIRONMENT

8.0 OVERVIEW

The meal environment is a large system consisting of many parts and the Aged Care Standards are the underpinning controlling aspect. The aim of study six was to investigate the function of the meal environment system within an aged care home by undertaking an overall review. It was also to highlight where within the system some consideration may be given to the current expected outcomes to provide more support to RACH's. This was undertaken utilising the materials provided by the Quality Agency which is outlined in appendix two. It is important to note that all homes taking part in this study had three years accreditation. Objective 1.6.2 was met indicating that there was a wide variety of the standards undertaken by homes.

Figure 8.1 Study Six – system investigation of the Aged Care Standards



Adapted Vaden 1980

8.1 DESIGN

Table 8.1 outlines the documentation which is used as part of the accreditation system. These documents form the backbone of this system and is what every meal environment (aged care foodservices) is measure against for compliance for accreditation. These are federal government documents which all aged care homes use to ensure that they provide services which meet the expectation of the Australian Quality Agency. .The total number of statements pertaining to each document and the number of statements pertaining to the meal environment system is shown. Expected outcome 3.9 on choice had no statements regarding the meal environment and was not used.

Table 8.1 National Australia Accreditation* documentation pertaining to the meal environment system

Document	Number of statements	Statements pertaining to the meal environment system
Expected outcome 2.10	23	4
Expected outcome 4.8	27	18
Results and process guide (R2.10)	19	4
Results and process guide (R4.8)	23	1
Module 7	12	5

*Australian Aged Care Standards – national accreditation framework

Each document was assessed and statements pertaining to the meal environment system were used to provide measures for a system analysis utilising the data collected from the case studies from chapter three to seven. Data was used to describe the system performance which was both qualitative and quantitative and to provide insight into how the meal environment system was functioning in residential aged care homes.

8.1.1 Menu planning (controlling factor)

1. Menu planning includes a variety of food and fluids textures that are appropriate to resident's needs (2.10)
2. Catering and menu planning to ensure that quality and variety of food is maintained and is regularly reviewed (4.8)
3. Menu rotation to ensure variety in accordance with relevant guidelines (4.8)
4. Refreshment and snacks available (4.8)
5. Menu updated regularly (4.8)
6. Information on the menu is provided to residents and alternative meals are available (Mod 7)

8.1.2 Staffing (input)

1. Availability of appropriate staff at meal times for assistance and supervision (4.8)
2. The home has monitoring system in place to identify and where possible, prevent issues in nutrition hydration oral and dental care from arising and recurring (Mod 7)
3. Specific communication with the kitchen and dining staff as appropriate (R2.10)

8.1.3 Dietitians (input)

1. That expert dietary advice is sought when necessary (4.8)
2. Access to expert advice and reference materials, as needed (4.8)
3. The nutritional suitability of the diet and menu is reviewed by appropriate specialist (R2.10)

8.1.4 Production and meal delivery system (transformation)

1. Food prepared by appropriately trained staff, and served in a visually pleasing manner and in appropriate quantities (4.8)
2. Main meals served on time (4.8)
3. The standard of catering service to be delivered. Eg choice, quality and quantity (R4.8)
4. Meal and drink temperatures are appropriate for residents (Mod 7)
5. Meal are generally on time, well presented and at an appropriate temperature (Mod 7)

8.1.5 Dining room (transformation)

1. Residents receive sufficient food and fluid to meet their nutritional requirements (2.10)
2. Identification of the assistive devices that are available for resident to use (2.10)
3. That the dining room is conducive to the relaxed, pleasant and social enjoyment of food (4.8)
4. Dining room promotes and encourages a social environment (4.8)
5. Minimisation of disruptive noise (4.8)
6. When residents choose to remain in their bedroom for meals, the room is prepared prior to serving the meal. (4.8)
7. Monitored fluid intake (R2.10)
8. The provision of appropriate resources to assist residents intake eg feeding devices and staff assistance (R2.10)
9. Environment which promotes enhances the residents nutrition and hydration with aroma of food, clean meal environment and dining room recognisable space (Mod 7)
10. Meals are generally on time, well presented and at an appropriate temperature (Mod 7)
11. Home encourages residents' independence and dignity during meal times and drinking (Mod 7)

8.1.6 Information systems (memory)

1. Assessment, on admission, of each resident's dietary preferences for menu planning (4.8)

2. A system for monitoring, documenting and reviewing each resident's dietary preferences (diet card) (4.8)
3. Availability of dietary information for the development and review of menus to ensure residents needs are meet (2.10)

8.1.7 Feedback for menu planning (feedback)

1. Resident participation in menu planning and food presentation (4.8)
2. Regular review of catering and menu planning with input from residents and staff (4.8)
3. Regular communication and consultation between residents and catering staff on menu planning, food presentation and individual preferences, including where the resident prefers to eat (for example, through resident feedback, individual resident assessments, meetings, surveys etc) (4.8)

8.2 DATA ANALYSIS

Data from each case study was matched against statements as above to indicate how the system was functioning and utilising the system theory framework. The interpretation of the system was made from evidence acquired from the five case studies in this thesis. The information from the studies was coded as eg CS4 = (Case study 4). Some of the results were averaged across meals to produce overall figures to summarise data.

8.3 RESULTS

8.3.1 Menu planning in the meal environment system (control)

Table 8.2 outlines the menu planning in the meal environment and highlights that regular review is open to interpretation, that menu planning is not regularly reviewed, communicating the menu was not often carried out and dietetic interface with foodservices and menu planning was a more required service.

Table 8.2 Alignment of menu evidence drawn from case studies with elements of Australia Aged Care Standards

Expected outcome, results and process guide or module 7	**Evidence drawn from all case studies**	**System functionality and impacts**
For catering and menu planning to ensure that quality and variety of food is maintained and is regularly reviewed (4.8) Menu updated regularly (4.8) The menu takes into account residents preference and is reviewed by appropriate specialists (M7)	CS1 (Table 3.14) Dietitians as required 72% and mostly only 27% usage in the year with 21% with nothing stated CS4 (Table 6.11) 42% of menus were not reviewed within the year CS5 (Table 7.3 & 7.11) Vitamised/puree variety of foods was 40% less than that of the general menu The quality of the vitamised/puree meals was subject to the use of left overs (19%) and higher repetition ranged between 15-78% Choice CS2 (Table 4.6) Choice lunch 64% Choice evening meal 42% CS4 (Table 6.7) Choice lunch 56% Choice evening meal 83% CS5 (Tables 7.4,7.5, 7.6 & 7.7) No choice for vitamised/puree	Expected outcomes place no time frame on when a menu needs to be regularly reviewed Regular review is open to interpretation as shown in CS4 Vitamised/puree variety of foods was reduced compared to the general menu Left over foods were used for residents on vitamised/puree meals Unclear in regard to who the appropriate specialist is. Choice was confined to lunch and evening meal There is no mention within any accreditation documentation regarding the level of choice to be made available
Menu rotation to ensure variety in accordance with relevant guidelines (4.8) Relevant guidelines	CS4 (Table 6.3) 100% of menus on observation were rotated CS1 (Table 3.2) 37% of menus used the same menu all year CS1 (Table 3.2) 6% of menus were 3 weeks or less in cycle	There is no cycle length stated within the expected outcomes Menu rotation is left up to individual homes which may mean that the menu is not changed throughout the year Unclear as to what relevant

Expected outcome, results and process guide or module 7	Evidence drawn from all case studies	System functionality and impacts
	CS3 (Table 5.12) Compliance at its best was 23% CS4 (Table 6.37) 4% for the compliance tool one from the written menus 19% upon observations of the evidence that homes undertook some of these specifications. Still indicating the relevance of these tools is quite questionable and would need considerable support to implement.	guidelines pertain to the sector. If they pertain to documents used in study three and four, then menu planning is missing the mark and this system needs considerable support for tool compliance Compliance of the written menus compared to available standards/guidelines was quite low, the main reason was the quality of the written menu There is no expected outcome or any document which supports the type of information which should be used to plan menus.
Refreshment and snacks available (4.8)	CS1 (Table 3.3 & 3.4) CS4 (Table 6.6) 100% for general diet on observation CS4 (7.5) 63% Morning tea vitamised/puree foods 57% Afternoon tea vitamised/puree foods 13% Supper foods CS4 (Table 7.5) Morning tea drink only 37% Afternoon tea drink only 43% Supper drink only 87% CS2 Written menu (general menu snacks and fluids) (Table 4.5) MT biscuits (30%) AT biscuits (40%)	Snacks and refreshments were available General menu was fine for snacks and fluids, however, the Vitamised/puree mid-meal snack was not provided. There was only a drink supplied for some of these snacks and was often not specified on the written menu. Vitamised/puree sometimes only offered a drink with no snacks (food)

Expected outcome, results and process guide or module 7	Evidence drawn from all case studies	System functionality and impacts
	Supper biscuits (71%) General menu CS2 (Table 4.3) Vitamised/puree menu (Table 7.2)	From the written menu it was difficult to know what was served during these meal times for both food and fluid Biscuits were the predominant snack provided
Menu planning includes a variety of food and fluids textures that are appropriate to resident's needs (2.10)	CS5 (Table 7.3) Variety of foods decreased for vitamised/puree on observations CS5 (Table 7.11) Menu planning undertaken on the day 75% Ice cream not offered 86% to vitamised/puree Desserts the same for both meals 92% vitamised/puree Mashed potato (100%) only way potato is served to residents on a vitamised meal CS2 Menu integration (Table 4.4) Textures at best 20% CS4 (Table 6.12) Written menu integration texture modification Yes lunch 56% Yes evening meal 33% CS2 CS4 No thickened fluids written on the menu CS4 (Table 6.28, 6.29, 6.30) Thickened fluids were offered but wastage was quite high	No expected outcome in regard to level of information which should be written on menus Variety of foods for the texture modification is reduced Menu planning is not clear and therefore homes were often producing the menu on the day Menu integration was not highly specified on written menu
Information on the menu is provided to resident and alternative meals are available	CS4 (Table 6.27) Menu on display in the dining room	There were no menus on display for residents to view in some

Expected outcome, results and process guide or module 7	Evidence drawn from all case studies	System functionality and impacts
(Mod 7)	Yes 56% No 44% Menu boards were used Yes 67% No 33% No information on the texture modified meal on display Yes 0% No 100% Menu changes are made and not communicated to residents (100%) Alternative meals CS2 (Table 4.6) Lunch alternative 64% Lunch dessert 11% Evening meal alternative 7% Evening dessert alternative 57% CS4 (Table 6.7) Lunch alternative 56% Evening meal alternative 83% CS5 (Table 7.4,7.5,7.6, 7.8) Vitamised/puree no alternative meals 0% no choice only got what was served	homes No menu boards in some areas Menu boards provide little detail on food supplied or information for the vitamised/puree meal When the menu was changed there was no communication to residents Alternative meals were offered from the written menu From observation in the meal environment All residents had a meal Alternate meals were mainly found at lunch and evening meal for hot options only. Once on a vitamised/puree meal there was no alternative meals available But overall the menu communication to residents was at times poor.

8.3.2 Staffing in the meal environment system (input)

Table 8.3 outlines the staffing of the dining rooms, showing little monitoring of food intake especially for residents on vitamised and thickened fluid diets.

Table 8.3 Alignment of staffing evidence drawn from case studies with elements of Australia Aged Care Standards

Staffing system	**Evidence drawn from all case studies**	**System functionality and impacts**
Availability of appropriate staff at meal times for assistance and supervision (4.8)	CS4 (Table 6.22a) Dining room not supervised at all times by staff Breakfast 33% Lunch 36% Evening meal 69% Staff going to breaks during meals B 39% L 39% EM 39% Eating assistance 10% of residents took a long time to eat No co-ordination of dining room services 100% Inconsistent eating assistance observed Yes 61% No 39% CS4 Mid-meal snacks (Table 6.22b) Often supervision was quite poor	Dining room was supervised at all times Split dining/tray services Feeding residents in rooms Taking residents back to their bed rooms which left the dining room unsupervised many times No documentation observed in the meal environment indicating which residents required assistance to support the co-ordination of meal services There was no co-ordination of meal services to ensure all residents' needs were met and it was difficult to know who needed what support. Many residents were left floundering at meal times
The home has monitoring systems in place to identify and where possible, prevent issues in nutrition, hydration, oral and	CS4 (Table 6.22a) No Food intake records 100% Monitoring for malnourished residents in dining room	Poor monitoring observed at all meal services by staff *all homes did have a system to weigh residents

Staffing system	Evidence drawn from all case studies	System functionality and impacts
dental care from arising or recurring (Mod 7) Increased monitoring of resident at risk of poor nutrition due to receiving vitamised diet or thickened fluids (mod 7)	No 100% No monitoring of residents on thickened fluids or vitamised diet 100% Poor meal consumption of over 25% across all care levels (except breakfast low care) Poor fluid consumption over 23% across all care levels	every month No monitoring undertaken during meal time This part of the standard requires some consideration in terms of functionality. As it was evident that some residents may not be consuming enough food and fluids
Specific communication with the kitchen and dining staff as appropriate	CS4 (Table 6.24) There was strained communication channels observed across all meal environments Yes 100% Table 6.24 general observation Staff complained about the lack of communication with kitchen	Observed difficulties between care and foodservice staff impacting on the meal delivery to residents. Food service staff reporting difficulties with getting timely information regarding residents food needs and care staff indicated difficulties with foodservices

8.3.3 Dietitians services in the meal environment

Table 8.4 Alignment of dietetic usage menu evidence drawn from case studies with elements of Australia Aged Care Standards

Dietitians services	**Evidence drawn from all case studies**	**System functionality and impacts**
That expert dietary advice is sought when necessary (4.8) Access to expert advice and reference materials, as needed (4.8)	CS1 (Table 3.14) 15% of homes had no dietitian employed to provide support As required 72% CS3 (Table 5.12) Compliance of menus audit from tools (reference materials) was only 23% CS4 (Table 6.37) 4 % compliance from written menu 19% from observations of the meal environment	No consistent service provision As required service was the most popular engagement of dietitian No consistent message for aged care to follow in supporting the meal environment Reference materials such as other standards/guidelines is inconsistent and current menu planning (written and on observation indicate poor compliance)
The nutritional suitability of the diet of menu is reviewed by appropriate specialist (R2.10)	CS4 (Table 6.11) 42% had menu reviewed by a dietitian once a year Employed by the home 21%	Dietitians not used consistently within these services but is determined by individual homes Menu updated and assessed regularly by dietitian Dietitian employed by the home

8.3.4 Production and the meal delivery system in the meal environment

Table 8.5 outlines how the production system undertook its role in the meal environment. Overall, meals were presented well but there were areas for improvement. The portion sizes of food varied and were inconsistent across studies. There were issues with choice for all residents and some meal environments struggled to ensure that every resident received a hot meal.

Table 8.5 Alignment of production system evidence drawn from case studies with elements of Australia Aged Care Standards

Production and meal delivery	**Evidence drawn from case studies**	**System interpretation and impacts**
Food prepared by appropriately trained staff, and served in a visually pleasing manner and in appropriate quantities (4.8) Appropriate quantities	CS4 (Table 6.13, 6.18) Meals served neat with no spills Yes 38% No 62% Meal colour balanced Yes 85% No 15% Vitamised/puree meal with no spills Yes 70% No 30% Vitamised/puree colour balanced Yes 61% No 39% Vitamised/puree meals were not smothered with gravy making them unrecognisable Yes 60% No 40% Vitamised/puree meal was not mashed together further reducing presentation Yes 67% No 3% Meal size was offered Yes 70% No 30%	The level of presentation was determined by how quickly meals were served and by the level of skills of staff.

Production and meal delivery	Evidence drawn from case studies	System interpretation and impacts
	Portion control used to serve meals Yes 14% No 86% CS4 (Table 6.33) Portion size for general menu at times below specified range CS5 (Table 7.9) Portion size for vitamised menu mostly below specified range	What does appropriate quantities mean? There were some small portion sizes served to residents which may be inadequate nutritionally
Main meals served on time (4.8)	CS4 (Table 6.19) Breakfast 94% Lunch 92% Evening meal 94%	Only system impact was when staff were not organised Most homes started the meal service on time
The standard of catering service to be delivered eg choice, quality and quantity (R4.8)	Choice was provided to residents No choice for vitamised/puree As above Portion control was below specified documentation with 31% and above not meeting the minimal portion size	Choice available to those residents on a general menu Vitamised no choice (never, once you went onto this texture modification all choice was lost)
Meal and drink temperatures are appropriate for residents (mod 7) Meals are generally on time, well presented and at an appropriate temperature	CS4 (Table 6.17) Meal temperature Yes 51% No 49% 14% had no thermal support system in place	Meal delivery systems Observed food in front of residents going cold while awaiting assistance to feed Thermal support systems Time to get meals to residents Co-ordination of dining room services Time it takes to assist residents to feed Meals left out to go cold

8.3.5 Dining room in the meal environment system

Table 8.6 outlines some of the dining rooms in the meal environment showing that dining rooms had little aroma and at times were untidy. Some dining rooms were inclusive but most struggle to be able to serve tables together. Residents could remain in their rooms but these were not set up and there was poor monitoring of food intake.

Table 8.6 Alignment of dining room evidence drawn from case studies with elements of Australia Aged Care Standards

Dining room	**Evidence drawn from all case studies**	**System functionality and impacts**
Dining room promotes and encourages a social environment (4.8) That the dining room is conducive to the relaxed, pleasant and social enjoyment of food (4.8)	CS4 (Table 6.21 & 6.25) No aroma of food B 86% L 75% EM 86% Dining room is prepared with neatly organised tables that are clean B 39% L 39% EM 39 Music is playing B 11% L 17% EM 14 Tables are served together B 11% L 6% EM 8% Table seating is designed so that all residents are inclusive Yes 58% No 42%	Design features reduce the ability of dining room functionality What does this statement mean?

Dining room	Evidence drawn from all case studies	System functionality and impacts
	Staff hand out medications during meal services Yes (100%)	
Minimisation of disruptive noise (4.8)	CS4 (Table 6.24) Dishwasher operating during meal service Yes 73% No 19% Plates are scraped away from dining room Yes 19% No 73% Plates removed by trolley during meal services Yes 69% No 11% TV was on during meal service Yes 14% No 86%	Kitchen and kitchenette design impacts upon this Some tray meal services used Overall the dining rooms ran efficiently
When residents choose to remain in their bedroom for meals, the room is prepared prior to serving the meal. (4.8)	CS4 (Table 6.26) Trays use mats or are embossed Yes 47% No 53% Trays were arranged as a table would be Yes 28% No 72% Residents' rooms were prepared prior to meal service No 100% The observed meal environment showed some residents ate all their meals in their rooms Yes 100%	Tray meal services often poorly organised and presented to residents. Residents were not prepared prior to meal being delivered. Use of trays is wide spread in aged care homes and again this part of the standard needs support and consideration.
Residents receive sufficient food and fluid to meet their nutritional requirements (2.10)	CS4 (Table 6.33,6.34 & 6.35) Poor meal consumption of over 25% across all care levels (except breakfast low care) Poor fluid consumption over 23% across all care levels	Consumption was poor and this is not supported by standards setting a minimal safety target staff should be reportable to

Dining room	Evidence drawn from all case studies	System functionality and impacts
Environment which promotes and enhances the resident's nutrition and hydration with aroma of food, clean meal environment and dining room recognisable space (Mod 7)	CS4 (Table 6.25) Aroma of food Yes 12% No 88% Dining room is a recognisable space Yes 75% No 25% Dining room is free of clutter Yes 69% No 31%	Physical design of the dining room detracted from food aroma No planning guidelines for how dining rooms should be built are in the standards.
Home encourages residents' independence and dignity during meal times and drinking (Mod 7)	CS4 (Table 6.23) Staff sit to assist resident to feed Yes 40% No 60% Staff ask before taking plates away Yes 48% No 52% Residents see the meal before it is cut up No 100% Residents were served one food course at a time No 100% Tables in dining room are served together Yes 58% No 42% Appropriate feeding techniques being observed Yes 50% No 50% One resident being fed at a time Yes 91% No 9% Residents receiving assistance were interrupted by staff for non-resident related matters Yes 29%	Overall some basic dignity dining room practices. This is an important area, poorly supported by the standards and educational aspects of the aged care Cert III.

Dining room	Evidence drawn from all case studies	System functionality and impacts
	No 71%	
Monitored fluid intake (2.10R)	CS4 (Table 6.22a) No food intake records observed being used	Monitoring fluids was observed to be poor
The provision of appropriate resource to assist residents intake eg feeding devices and staff assistance (2.10R)	CS4 (Table 6.23) Yes	Assistive devices

8.3.6 Information system in the meal environment system

Table 8.7 Alignment of information system evidence drawn from case studies with elements of Australia Aged Care Standards

Information system	**Evidence drawn from all case studies**	**System functionality and impacts**
Assessment, on admission, of each resident's dietary preferences for menu planning (4.8)	CS4 (Table 6.27) Yes 100%	Menu information collected upon admission for dietary preferences
A system for monitoring, documenting and reviewing each resident's dietary preferences (diet card) (4.8)	CS4 (Table 6.27) Yes 100%	System for monitoring residents dietary preferences
Availability of dietary information for the development and review of menus to ensure residents needs are meet (2.10)	CS4 (Table 6.27) Dietary information in place for production system Yes 92% No 8% Dietary information for trays as used during meal services Yes 75% No 25% Method to collect dietary information from residents unable to communicate – to makes changes or choice Yes 11% No 89% Time to implement dietary changes is greater than 24 hours Yes 31% No 69% Emergency changes are made on the same day Yes 61% No 39%	At times the availability of dietary information was limited especially for residents unable to communicate and for dietary changes. The system supporting these were paper based and time consuming and rely upon multiple points where data had to be updated on many lists.

8.3.7 Feedback in the meal environment system

Table 8.8 outlines the feedback for the menu planning system.

Table 8.8 Alignment of feedback evidence drawn from case studies with elements of Australia Aged Care Standards

Feedback	Evidence drawn from case studies	System interpretation and impacts
Resident participation in menu planning and food presentation (4.8) Regular review of catering and menu planning with input from residents and staff (4.8) Regular communication and consultation between residents and catering staff on menu planning, food presentation and individual preferences, including where the residents prefer to eat (for example, through resident feedback, individual resident assessments, meetings, surveys etc) (4.8)	CS1 (Table 3.6) Residents participation in menu planning 86% Resident feedback into menu planning 79%	Residents are active participating in menu planning There was no system in place to support the residents who were unable to communicate This part of the standard seemed to be well undertaken by RACH's

8.4 DISCUSSION

The underpinning system controlling factors for aged care homes is the Aged Care Standards. Any system controls perform three functions, to ensure regulatory compliance, that resources are used efficiently to achieve organisation goals and provides standards to be used in evaluation of services (Spears, 2000; Gregoire 2013). The other studies demonstrated that the meal environment is a large system. Spear, 2000 framed the system approach to identify that all systems are a way of thinking and how integrated parts make an organised whole (Spears, 2000). The results tabled in this study demonstrate that some of the aspects of the standards were not observed as being functional within the whole system.

8.4.1 Commentary regarding the Aged Care Standards

The literature over the last 10 years has discussed the effectiveness and value of the Aged Care Standards. There is no doubting that the Australian aged care system has developed to provide a framework by which aged care services are controlled and monitored. The system funding based on an accreditation and quality improvement framework (O'Reilly, et al 2007; McDonald, 2009). From the 2010 compliance report card, over a ten year period showed only 1.6% of homes required sanctioning (Elis & Howe, 1010). The corner stone of the aged care standards from the quote on page twenty is that homes do not have to respond to a standard in the same way and they are outcome based and open to interpretation. This open interpretation of the standards has been criticized and acknowledged that they can be easily distorted (Campbell, 2007, O'Reilly, et al, 2007; Productivity Commission Report 2011; Ellis et al, 2010). The Productivity Commission report made some suggestion that they were soft and such achievement with accreditation does not always translate into quality care outcomes (Weiner et al 20007). Once accredited, a home is expected to maintain a level of performance that complies with the accreditation standard (Aged Care Submission 2010).

The data in this study would suggest that some homes were struggling to maintain the expected standards. Many factors are likely to influence quality of life of a resident (Braithwaite, 1988). Many residents have medical conditions which make them vulnerable and these conditions impact on their quality of life. Residential aged care is provided over a period of time to residents whose changing needs can be gradual or rapid (Campbell, 2007). Living in an aged care home reduces the world for residents, so the meal environment system plays an important role in providing an essential link to food which plays a central role in all residents' lives on a daily basis.

Accreditation is a one off event and systemic problems cannot be addressed if they are not uncovered. The results in this study were observations made on the system and it is acknowledged that these were snap shot observations on a system which will now be discussed. Study six uniquely examines the aged care standards and documents used in the accreditation process as shown in table 8.1 pertaining to the meal environment system. All information from study four was taken from homes which had three years' accreditation.

8.4.2 Functionality of the system

8.4.2.1 Controls

The menu is the controlling factor for the meal environment and it relies upon other supporting factors from the meal environment for its total success. Success for the menu is that every resident receives the meal they would like to eat, each and every meal time in a manner which is acceptable to them. Much has been said regarding the reduced information in planning menus in aged care during this body of work, but it is obvious that some of the expected outcomes do not provide adequate support for areas identified such as menu communication and choice. The data has suggested that the assessment of menus by Dietitians is not regularly undertaken within this sector.

Study five highlights the plight of residents on a vitamised/puree meal and though this is a small groups of residents within this sector, they pay the same amount of money but receive a poorer quality service. An alternative meal implies choice. Very little menu planning and integration is carried out and the meal environment observations suggested that there is no choice for these residents.

With these menu system issues and the lack of menu design statements from the Aged Care Standards, it is easy to understand why homes do not have a stronger menu planning focus. The Canadian standard relating to choice specified that both the general and vitamised/puree meals have two choices for both meals and desserts and also provides input on how menus should be structured and the use of standard recipes. The Australian standard has a whole expected outcome on choice (3.9) with no foodservice indicators translating choice into menu options. Adding to this other supporting system to the menu like tray meal delivery services limits the choice to residents and further hinders the delivery of the menu. While residents, through the information system, do get to choose certain parts of their meals it is also not at point of service and often they forget their choices.

8.4.2.2 Inputs - Staff and dietitians

Staff supervision of the dining room to assist and support residents was, at times varied due to meal breaks and the unco-ordination of service provision. This practice should not happen as it could contribute to the reduction of feeding support to residents. One of the most interesting aspects of the dining room was the lack of co-ordination of the service to support residents. This is a crucial factor and some of the reasons why the dining rooms were unsupportive was due to how staff organised their time and the lack of information regarding the type of assistance residents needed. The literature is full of studies of how eating assistance is crucial to resident's food intake (Kayser-Jones, 2000; Crogan, et al, 2001; Simmons, et al, 2001) and staffing ratio (Kayser-Jones, 1997). All the Australian standard eludes to is appropriate qualified staff, whereas the Ontario standard specified staffing in more detail and the American standard outlines the role of feeding assistants in appendix two.

There is also poor monitoring in the dining rooms for residents who were malnourished, on a texture modified diet or on thickened fluids. The expected outcomes are quite self-explanatory noting that any residents within these areas need to be monitored. The reason why this was not occurring can only be speculative but could relate to the standards being ignored, homes not knowing how to interpret the standards, not knowing how to build a system to ensure that monitoring is carried out or that one of the major statement regarding this is embedded within the modules and not written in the expected outcomes. It is reasonable to think that homes in this study struggle with the interpretation of this aspect of the standards and would benefit from dietetic input. Dietitians play an important role in preventing and maintaining nutritional health for nursing home residents (Carrier, et al, 2007). The dietetic input from study one suggested that this was reduced and as required, study four further highlighted that homes did not engage a dietitian as part of their services on a regular basis.

8.4.2.3 Transformation

8.4.2.3.1 Temperature of meals

While some homes did have compliance with this, there were some that did not. This is crucial for homes to get right every meal. From study four there were photos which showed how the meal delivery system failed to thermally support meals. Eating is enhanced by the temperature of the food, so the first couple of mouthfuls need to be right so that the resident will activate the sensory stimulation ensuring that pleasure is obtained from the meal. Residents are already coping with some degree of sensory impairment of taste, smell, vision and hearing (Bale et al 2007), which

would lead to poor appetite with reduced energy consumption (Brownie, 2006), For a cold meal to turn up would indeed be very disheartening and limit the enjoyment of food (Wellmam, 1999).

8.4.2.3.2 Eating location

Dining rooms are the preferred place to eat as they encourage socialisation and food intake (de Castro, 1993; Simmons et al, 2002). While the expected outcome allows residents to choose where they would like to eat, this actually makes the whole process of monitoring food intake and assistance to residents more difficult. High care had the highest number of residents in their room for meals and this was the environment where residents were more likely to eat all three meals in the day. Spending excessive time in bed has been associated with detrimental outcomes, including pressure ulcers, pneumonia, under nutrition, infections and mortality (Benson-Jenson 2004). Castro and de Castro 1989, found that food intake increased with more individuals present and dining room interaction (de Castro & Stroebele, 2002).

The meal delivery system plays an important role in supporting the dining room. Study four highlights that the majority of high care residents were being delivered their meals on trays in their rooms and this led to increased plate waste. Tray meal services come with a number of disadvantages to the meal environment eg not being able to generate food aroma and once the tray is made up and delivered, unable to change portion size or offer seconds. Trays meals servicers are predominately used to transport meals to dining rooms which are not centrally located near the kitchen or to resident's rooms. The standard in which dining rooms are to create a social environment, with aroma of food is difficult to achieve with trays meal services. So why are aged care homes allowed to be built with a meal delivery system which clearly detracts from the creating a home?

8.4.2.4 Outcome

Enough food and fluid

While this work did not delve into dehydration some of the data in study four would indicate that at times residents may not receive enough to drink. The meal consumption data has been discussed already but the expected outcome clearly indicates that residents are to be provided with enough food and fluid. Again it can only be speculative as to why there would be some evidence which would suggest that this may not be occurring.

- A lack of mid-meal snacks for residents on a vitamised/puree meal
- High level of non-consumption of foods and fluids
- High plate waste and the use of tray meal services

- The different portion sizes which were observed at times to be small with no food fortification strategies as part of standard menu planning

Other aspects of the system have indicated that support to help residents eat enough food and drink enough fluids are lacking and include

- Reduced monitoring and staff supervision
- Tray meals services are inflexible with portion sizes and meal changes
- Information system of menu ordering is days from the meal time
- Meal delivery not supporting the meal temperature
- Residents in their rooms are harder to monitor

The meal environment must operate as a system. As shown above elements of the system firstly, interlinked and secondly fail to maintain quality of the system if they do not work together (Cotter, 1998).

8.4.3 Terminology used in these standards

Outcome based standards requires terminology to be freely interpretive. Terms and statements such as the ones below are examples of the terminology used to allow aged care homes to inteprete and design the meal environment system. What does this type of terminology mean? Data across these studies indicate a varied amount of responses some of which may lead to an impact on resident care.

- Regular reviewed
- Nutrition expert, Appropriate specialists to review diet and menu
- Relevant guidelines
- Alternative meals are available
- Appropriate quantities
- The standard of catering services to be delivered eg choice, quality and quantity

Accreditation programs that focus on minimum standards are unlikely to challenge practice and stimulate performance improvements (Campbell 2005). If there is no standard for engagement of dietetic skills or recognition of the Accredited Practices Dietitians as the nutrition experts then who is assessing menus and to what academic level. In the Canadian and American Standards, only qualified dietitians are working within their sectors. The Australian standards open the meal environment systems to be undermined nutritionally by not engaging dietitians.

Examining the terminology of relevant guidelines again opens this sector to be influenced by any means available. The current guidelines (study three) highlight that this sector has yet to work out a single standard for menu planning with individual states formatting their own menu planning standards/guidelines. They all varied between the information they provided, adding to the confusion as to what a home should use. There were different parameters across specifications for

portion size, food serves and menu information and very little information on the dining room, menu planning and texture modification. In study three it was discussed regarding the support which is required to ensure that any material which is to be used as part of service standards needs to be supported by the legislation. The aged care standard may benefit from actually stating a guideline which is to be used and then set about ensuring that it is evaluated for its effectiveness. The standard framework is most criticised for the lack of specificity and too open to interpretation. Some homes have been noted wanting more input or process-based standards giving them more certainty with respect to compliance. From the evidence collected by the Government on the Australian Aged Care system from accreditation, the standards current design and expression is consistent with the modern approach to quality improvement (Campbell, 2007). The data from this study would suggest that some of that quality is being undermined by the open interpretation of these standards.

The terminology for appropriate quantities leaves portion food size wide open. The DAA Report (2012) raised the issue that portion size needs to be standardised. The portion size evaluation undertaken in study four indicated that at times very small portion sizes were served. This is where other system supports need to be engaged like monitoring, food fortification and eating assistance. "The standard of catering services to be delivered eg choice, quality and quantity" is a wide open statement and is very difficult to quantify and currently there are no measures used within aged care to determine if this is being delivered.

8.4.4 Evaluation and monitoring of standards

Malnutrition and dehydration is the consequence of the meal environment system failing. There are also other consequences such as dissatisfied residents, high plate waste and complaints regarding the services. But the most important aspect of the meal environment is to support residents to maintain a high quality of life and to prevent unintentional malnutrition and dehydration. The malnutrition debate has raged for decades as shown in table 2.5 but even from this small system review there are clear areas of dis-functionality which would raise concerns about the overall outcome of resident quality of life if the system remains as it is.

From the system definition of Spears (2000) the third aspect of monitoring and evaluation seems to be the areas which is lacking within this system. Accreditation is every three years and some homes may have a spot check with model 7 (Nutrition and Hydration) and that is all there is for the monitoring of this large system. The food safety monitoring is a yearly evaluation and an additional system which does not take into consideration the meal environment. Homes in this study had three year accreditation with a meal delivery which allowed residents meals to go cold. On observation,

homes indicated that there were very little complaints regarding meal temperature. The literature indicates that as many as 40% of residents of aged care homes may be unable to makes complaints due to cognitive or sensory impairment (Campbell Report 2005). So while some residents can voice their concerns many are unable to and therefore rely upon the system to ensure that meal quality is high.

The data presented is not to imply that staff were uncaring, but highlights system issues which make it difficult for staff to be fully supported. So while staff may be doing what they think is correct the system design is actually failing to provide the framework for improved quality of care. When homes were informed that meals were going to residents cold, there was immediate action and system changes were undertaken. So while it is fine to have open base standards, behind these should be guidelines which outline best practice in service delivery. Most countries get their aged care regulatory standards wrong because they are more concerned about consistency of enforcement or reliability. Reliability is more likely to be achieved when it is not the central objective of public policy. Designing standards which best foster a regulatory dialogue about how aged care can improve quality of life outcomes is the way forward (Braithwaite, 1998).

8.5 CONCLUSION

This is the first study of this type in Australia. The case study method allowed in depth data collection until saturation was reached. The data suggests that the systems are not operating as well as they should, considering the accreditation status of each home. The most important examples of this failure were meal temperature, portion size, monitoring of food intake and vitamised/puree meal choice.

The meal environment system is large and very complex and foodservices is a science in itself requiring specialised skills to manage. The menu planning survey and observational data highlighted that some meal environment systems are being managed by staff that do not have a back ground in foodservices. The accreditation process is an audit usually over two days which examines forty-four outcomes. The meal environment system is not reviewed as a whole, the way this thesis has done. Considering that this in-depth review revealed system areas which were dysfunctional, the accreditation process should be re-evaluated.

CHAPTER NINE - CONCLUSIONS

This thesis used qualitative and quantitative method approach to answer the following research questions

1. How is the meal environment system functioning in aged care?
2. What is the overall state and quality of the menu design and its planning within the meal environment in Australian residential aged care?

Purpose

To examine the meal environment system, to provide robust evidence for changes to policy and practice.

The number of homes sampled equated to 10% (20,808) of aged care beds in Australia providing a representative sample of information from the National Menu Survey and 1040 aged care beds from the meal environment observations.

This thesis has addressed an important topic. It is the first to conduct the following:

- A national survey of menus and foodservices in the RACH sector
- Detailed observational studies of plate waste and food and fluid consumption
- Examination of menu design and planning
- A comparison of the quality of menu planning between the general and vitamised/puree menu
- An analysis of available standards and guidelines in the aged care sector
- Analysis of the meal environment functionality in relation to the Aged Care Standards and other supporting documents used in accreditation

Keeping within the system model the following conclusions have been arranged to reflect the current meal environment system in aged care

9.1 OVERALL MEAL ENVIRONMENT SYSTEM

Conclusion one - foodservice overview

Chapters three, four and six provide evidence to improve our understanding of the way in which the meal environment system is organised in aged care and this is foundation evidence to underpin national policy in accreditation and improvement of services to RACH's.

9.2 SYSTEM CONTROLS

Conclusion two – Aged Care Standards and Support Documentation (External control)

Observational data of the meal environment system against the accreditation documentation indicated a number of areas in which the system had some issues with functionality as evidence by

- Monitoring within the meal environment (Table 8.3)
- Alternative meals and choice (Table 8.2)
- Temperature of meals (Table 8.5)
- Enough food and fluid (Table 8.6)

Terminology of the outcome-based standards are ambiguous and leaves homes with too much latitude in interpretation which undermines the menu system as evidenced by

- Relevant guidelines (Table 8.2)
- Regular review (Table 8.2)
- Appropriate staffing (Table 8.3)
- Appropriate (nutrition) expert (Table 8.4)
- Appropriate quantities (Table 8.5)

Conclusion three - standards/guidelines (general and state based) (External control)

General guidelines and state based standards are inconsistent in content and design. Due to poorly written menu information, the use of these tools in a menu auditing capacity is severely limited due to:

- Portion size was inconsistent across the standards and guidelines as evidenced by table 5.2
- Portion size used by aged care homes varied with compliancy as evidenced by tables 5.3-5.4-5.5
- Portion size which used range figures provide more flexibility and aged care homes portion size was more compliant as evidenced by tables 5.5-5.6
- General guidelines and state base standards were inconsistent in design table 5.7
- Compliance between the tools varied in terms of daily food serve specifications, menu item specifications and dietary food specification tables 5.8-5.9-5.10-5.11-5.12

The terminology used by the national aged care standards does not support any of these menu standards/guidelines used within the aged care sector and their relevance is questionable as evidenced by

- Written information on menus and observations in the meal environment highlighted that some of the tools and parameters were poorly incorporated into meal provision table 6.37

Conclusion four - Menu pattern for general and vitamised/puree (Internal control)

The most dominant menu pattern is shown below, (chapter three, four, six and seven) with the vitamised/puree menu pattern having reduced choice and food options

Menu	Breakfast	Morning tea	Lunch	Afternoon tea	Evening meal	Supper
General menu	Porridge Cereals Toast Fruit Juice	Biscuit	Hot meal Alternative Dessert	Biscuits	Soup Hot entrée Salad Sandwich Dessert	Biscuits
Vitamised Puree	Porridge Weetbix Puree fruit Juice	May be a snack and/or drink	Hot meal Dessert	Maybe a snack and/or drink	Soup Hot meal Dessert	Maybe a snack and/or drink

Conclusion five - Menu cycle and seasonality

The menu cycle on average was four weeks in length and homes used two seasonal menus in the year as evidenced by tables 3.2 - 6.3

Conclusion six – written information on menu

The poor written information on menus undermined parts of these studies making it difficult to ascertain what the menu was providing to residents. These studies demonstrate that one of the fundamental processes of menu design (development of the written menu) is severely compromised within this sector and impacts upon the system and in turn, level and quality of service to residents as evidenced by

- Written information of the general menu was lacking across the menu pattern (Tables 4.3 - 6.4) and photo 4.2
- Written information of the vitamised/puree menu was even more lacking when compared to the general menu and demonstrated poor menu integration (Tables 4.4 -6.4 -7.1 -7.2)
- Menu planning information regarding fluids provided by the menu is even more reduced as evidenced by table 4.3

Missing menu items make it difficult to

- Know what the menu is delivering from a food production perspective and as a communication tool
- Missing items could also increase the level of repetition of food items
- Assess the variety of foods offered
- Nutritionally assess the menu for adequacy but also adequate variety of foods

There are no standards regarding the information required to plan menus and as shown by conclusion two, menu planning reviews are irregular and up to individual homes to determine.

The evidence suggests that assessing menus within the aged care sector would be difficult, due to current planning processes and that how homes interpret menu design is inconsistent, unfair, poor quality and severely undermine nutrition and quality of life of those on a vitamised/puree diet.

9.3 SYSTEM INPUTS

Conclusion seven – staffing
Resident to staff ratio increased at the evening meal time which is a similar finding in the literature and evidenced by table 6.10

Conclusion eight – dietetic input

Dietetic input into aged care foodservices was very limited in terms of being a regular service used to assess the menu. When a dietitian was used the way they interfaced with other components of the meal service was limited as shown by evidence from tables 3.14 6.11. It was also noted that the aged care standards do not recognise the credential status of dietitians and the terminology used by the standards 4.8 is ambiguous;

- Nutrition expert
  - expert dietary advice obtained, when appropriate (for example through staff or visiting dietician (their spelling), public hospitals, phone or fax communication)
- Appropriate specialist to review diet and menu

In the actual planning of menus it seems that dietitians were not involved in that process while in terms of physical engagement with the facility it was “as required” or even as infrequently as yearly. This suggests that a vital controlling and input element of the meal environment system, the menu, often had very little or no input from dietitians.

Since the data suggests little input from dietetic professionals, menus are at risk of not being nutritionally adequate or not being planned appropriately to meet the needs of the meal environment. The poor quality of menus including those for vitamised meals are therefore unsurprising.

Conclusion nine - management of foodservice

The management of foodservices in Australian resident aged care is carried out by people with various backgrounds, including with and without formal training in foodservices as evidenced by table 3.13 & 6.15. This suggests that a vital management element of the meal environment system is being co-ordinated by some with little or no knowledge of how the system should work, with the potential for negative outcomes for the system and nutritional care.

Conclusion ten - Portion size

There is a need for better identification of minimum (and realistic) portion sizes for meal components. These studies show

- Portion sizes varied between homes and there was no consistent serve sizes used from the National Menu Survey as evidenced by table 3.15 & 3.16
- Inconsistent portion size occurring within homes, where documentation specified portion size with little evidence of equipment being used to undertake this and thus smaller meal sizes were a visual guess table 6.13
- Portion size varied between what was specified and what was actually served to residents as evidenced by table 6.33 indicating that for the general menu at times service sizes were <35g and for the vitamised (<25g) table (7.9). Further supported by photos 7.22-7.23.
- Homes utilising any of the tools from study three would be subject to inconsistent information (5.2 - 5.3 -5.4) and there is no support from the Aged Care Standards

Conclusion eleven – choice and alternative meals

Choice is an important factor for residents to provide quality of care, empower them within the home, and for those residents unable to access shops the food supply is the sole source of nutrition.

- Choice was available on the menu for breakfast, lunch (2 options) and evening meal as evidenced by tables 4.6 - 6.5 - 6.7 -6.8
- Minimum choice was available for mid-meal snacks tables 4.6 - 6.6
- Choice was very limited to those residents on a vitamised/puree meal (Tables 7.4 -7.5 -7.6 - 7.7)

Conclusion twelve - nutritional menu supports

The frailty of residents and the wide variety of needs residents have requires the menu at times to respond within the meal environment to support resident's nutritional requirements.

Nutritional support through the National Menu Survey indicated that supplements, extra foods and food fortification were used table 6.12

9.4 SYSTEM TRANSFORMATIONS

Conclusion thirteen – production and meal delivery system

Overall the production system most used in aged care was cook-fresh as evidenced by table 3.12 and 6.15

Overall the meal delivery system most used in aged care was bulk delivery system tables 3.12 & 6.16

Conclusion fourteen – tray meal services - high care

Tray meal delivery systems were more likely to be used in high care areas, reducing the flexibility of portion size, additional servings and changes to meal preferences as evidenced by table 6.16

Conclusion fifteen – meal temperature

The meal temperature was dependent on the type of meal delivery system in operation and often failed to provide meals at an acceptable temperature as evident by 6.16, 6.17. This could have consequences on resident food intake as well as food safety. Further evidenced by photos 6.11 – 6.13

Conclusion sixteen - dining room services

Dining room services form one of the most vital parts of the meal environment service system; however, can be easily impacted upon by supporting systems

- Resident meal location depended on care level with a high number of residents requiring high care eating their meals in their bed-rooms sometimes for all three meals as evidenced by table 6.20
- Meal time supervision, monitoring and assistance was not consistent or did not exist as evidenced by table 6.22
- All meal times were interrupted by the dispensing of medication
- Some of the feeding practices observed in the meal environment were undignified as evidenced by table 6.3
- Few dining rooms were designed to enable the aroma of food to be evident which is a key to a home like environment and to stimulate appetites as evidenced by table 6.25
- Some dining rooms were cluttered with dirty tables as evidence by table 6.25 & photo 6.15
- Tray meal services were often not set up to match a dining room table with untidy tray settings and residents not being given a choice if they wanted to stay in their rooms. This was controlled by staff as evidenced by table 6.26 and photos 6.17 – 6.19

9.5 Memory (information system)

Conclusion seventeen - residents making menu choice

The ability of residents to determine what foods will be eaten at meal times varied from immediately prior to consumption to only upon entering the home, as evidenced by tables 3.8 and 6.14.

The standards (3.9) make no reference to the choices regarding the menu, meal or dining services. Standard 2.10 makes no reference to any choices regarding the menu or meal service however it does specify that resident's documentation offers choice Standard 4.8 only makes a reference regarding choice of dining service. Choice is linked to resident satisfaction, quality of life and choice closer to meal times has been shown to improve food intake. This suggests that as choice is

crucial to resident well-being, the lack of specificity within the aged care standards again provides little support to residents.

Conclusion eighteen - information system

One of the critical aspects of the meal environment is the memory of the system which needs to be responsive to resident's needs to ensure appropriate menu planning and meal delivery.

The menu information system is crucial when managing the dietary preferences so that they are able to be acted upon quickly and all residents have the ability to make changes as evidenced from table 6.27.

All homes did have an information system in operation to manage dietary and preference changes as evidenced from table 6.27

9.6 SYSTEM OUTPUTS

Conclusion nineteen – plate waste

Plate waste is an indicator of how the system is functioning in terms of the menu and support in the meal environment.

Plate waste was the highest for both food and fluids in the high care areas within residential aged care as evidenced by tables 6.28 -6.29 -6.30

Bench mark plate wastage against industry marker of 20% plate waste was high for all evening and lunch meals with only breakfast meals having low plate waste as shown by table 6.31

Plate waste was higher for the tray meal services as evidenced by table 6.32

Both supplements and thickened fluids consistently had high plate waste, suggesting that though supplements were being provided they were not being monitored and therefore not providing nutrition support as evidenced from tables 6.28 -6.29 -6.30

Plate waste is an indicator of poor menu planning in terms of types and forms of foods

Conclusion twenty – meal consumption

There is no aspect of the standards which outline any minimal consumption point which would warrant further assessment of the resident and the adoption of nutrition support. This is for the home to manage and monitor.

Meals and fluids consumption was observed to be poorer for high care residents, though across all care levels there was raised non consumption of foods as shown in table 6.34 and 6.35

Higher care residents tend to be frailer and often on texture modified food and fluids and under the standards these residents are to be monitored at meal times. Table 7.10 would suggest that this system was not as supportive as it should have been. Further evidence by photos 7.24 – 7.26 & 6.8 - 6.10.

Conclusion twenty one – variety of foods

Variety of foods is essential for ensuring that the menu is providing enough food options and choice.

- Food variety was consistent for those of a general menu as evidenced by tables 4.5, 6.5 -6.6 -6.7 -6.8 & 6.9
- Food variety was less for residents on a vitamised/puree meal as evidenced by table 7.3
- Repetition data is also an indicator for food variety and for the general menu. The repetition values indicated that it was more likely to occur between weeks but not on the same day as evidenced by table 4.7
- Repetition data for the vitamised/puree menu was higher across all categories compared to the general menu implying that the variety is reduced as evidenced by table 7.8

Conclusion twenty two – menu in the meal environment

This body of work has shown that the menu information and design is quite lacking and observational data suggested that when meal services started often there were menus which were not followed; mistakes, not corrected leaving residents with the wrong meal with no communication with the residents.

- Menu mistakes and serving errors were at times not always corrected as evidenced by table 6.36
- Menu communication regarding menu changes were not undertaken to inform residents of meal changes as evidenced by table 6.36 and photos 6.1 – 6.4

Conclusion twenty three - Quality Vitamised/puree menu planning

The national menu survey surrounding vitamised/puree snacks and vitamised/puree diet raised concerns regarding the quality of the written menu in the meal environment system. Chapter seven outlines the evidence which further highlights the fundamentals of menu planning and that quality deteriorates for the vitamised/puree meals in the residential aged care sector

- Written information is more limited
- Lack of menu integration and therefore it was unclear as to the quality of the meal service in terms of all residents receiving the same meal – photos 7.15 -7.16
- No choice offered
- Current menu planning for vitamised/puree menus is not compliant with the expected outcomes in standard 2.1- "the residents on a vitamised/puree to have their individual preferences taken into account" as shown by no choice
- Repetition is higher, demonstrating a narrow range of foods and the menu is more predictable as shown by the mid-meal snacks being the same – photos 7.9 – 7.12
- The quality of the vitamised/puree menu in terms of what is provided to residents is an afterthought, planned on the day and utilising left overs as evidenced by table 7.11 and photos 7.5 – 7.6

- The use of left overs, repeated meals and same foods being served was a common practice in the meal environment which lead to reduced variety and repetitive menus as evidenced in table 7.11 and photo 7.17

There is no standard expected outcome that provides a minimal base by which menu planning should be undertaken for this very vulnerable group.

9.7 IN CONCLUSION

The major research questions have been addressed from these conclusions. From these six studies is is demonstrated that the system has some underlying issues. Menu planning needs to be done well to avoid repetition and to ensure choice options are available. It is clear that once a resident requires a vitamised/puree menu that choice is no longer provided and that the overall state and quality of menu planning fails to support these residents. It is clear from the evidence that some of the areas within the meal environment system do need some more consideration especially with regards to current standards and policy frameworks. The purpose of this thesis was to provide robust evidence to inform change to policy and practice and these conclusions demonstrate that some thought to how the Aged Care Standards are structured to provide support in menu planning which will in turn support the meal environment.

CHAPTER TEN - LIMITATION, FUTURE WORK AND REFLECTIONS

The system theory has been used as the framework to undertake these studies and there were some limitations which are noted below. Future work from this study has also been noted below to increase the knowledge of this system and to provide more supporting data for informed policy change. Lastly reflections to provide some personal insight into the collection of the data and observed issues in aged care.

10.1 STUDY LIMITATIONS

Study one (chapter three)

- Written format of the survey may have been too prompting leading aged care homes to provide set information.
- Limited analysis for the portion size data as a lot of the homes did not fill in this part of the survey

Study two (chapter four)

- Written menu information provided for the general menu was limited by the sample size of 161 menus returned from the national menu survey
- Assumption of what was written was all that was used by homes where in fact they may have had supplementary lists for menu information which was not supplied
- Some of the menu language reduce the count surrounding repetition

Study three (chapter five)

- The limitation here was the written amount of information provided on menus
- Queensland and Victorian standards were state specific and menus from other states were compared against them
- A lot of data was missing from the survey and that limited the sample size for portion size analysis
- None of these tools have any national recognition

Study four (chapter six)

- Study site selection was limited though an effort was made to select a variety of foodservice types.
- Limitation of one observer in the individual meal environment for only one day
- Mid meal waste (morning and afternoon tea) was not collected as it was physically impossible to undertake. This is an area which required more work

- Fluids were also not measured as accurately due to drinks being left in rooms and again impossible to collect fully with the current design

Study five (chapter seven)

- The limited amount of written information hindered this study in terms of the integration of menus with vitamised/puree meals.
- It is quite plausible that homes did integrate from the general menu and therefore it was not necessary to write this level of information on the menu
- None of the tools used to audit encouraged homes to write texture modification onto the menu and it could be reasonable to assume that homes do not think this is necessary

Study six (chapter eight)

- Observational and survey data being used to compare national standards based on single day snap shots
- Interpretation of the observer against outcome based standards which homes have the right to interpret and come to their own system conclusions
- Not all the expected outcome statements were used
- There is some duplication of the expected outcome statements
- System theory being used it was difficult to match up the standards into this system and there was some cross over

Case study methodology can be criticised for lacking scientific rigour. The way in which this study dealt was this was to use a particular framework (systems design) the studies were able to provide supportive evidence which continually suggested that menu planning and that the aged care standards within the system framework were compromised. The level of transparency undertaken for case selection, data collection and the level of involvement of the candidate in the collection of data thus reduced the lack of rigour

10.2 FUTURE WORK

<u>Menu design</u>

- How best to do this for aged care homes to deliver best outcomes for residents with increased choice
- Additional work on the variety of foods for the vitamised/puree menu and what impact current menu planning is having on this special group within RACH's
- Development of a framework describing what should be written on a menu (level of written information) for best practice
- Aged care standards which encourage homes to follow best practice guidelines which should include how menus should be written, the type of information on a menu to ensure that the

menu is a communication tool. How to increase choice, avoid repetition errors and direct the quality of texture modified meals.

- To include in future surveys on menu planning to enquire if homes used any standards and guidelines to assist with menu planning

Menu design supportive standard/guidelines tool

- Development of guidelines for menu planning to support the aged care standards. What would work best, what supports are really needed and how to make a tool such as this useful and relevant in RACH's.
- What would need to be put in place to ensure that a tool such as this became best practice and inform policy within RACH's. Examine the framework for how standards would be able to ensure a minimal menu design

Food and fluid consumption

- Studies on monitoring food and fluid intake and how this can be integrated into the system model of care across the meal environment. This should include the use of supplements and food fortification support strategies.
- Research into the importance of monitoring systems and how these can become part of best practice and mandatory so all residents are covered with the current expected outcome for vitamised and thickened fluid intake extended to include all residents.
- Address the issue of portion control and standard recipes as to why in foodservices these cannot be standardised and examining the use of serving equipment
- Analysis of small portion size meals and nutritional adequacy with and without food fortification
- Examining the nutritional adequacy of the vitamised/puree menu also need to be addressed to support how it is design and what nutritional strategies such as food fortification may be of use.
- Further investigation into the reasons why food fortification was not undertaken to understand this important nutrition support strategy
- Examining the nutritional adequacy of foods provided to residents in aged care including variety of foods and portion sizes

Dining room design for adequate nutritional intake

Studies to focus on the system of meal delivery and dining design which provides the best opportunity for nutrient intake and why dining has advantages in increased food intake and monitoring

Meal environment system

- Review the current process of accreditation so that this system is provided with the attention to detail in its functionality and the audit process takes in the whole system not sporadic pieces. Consistent auditing with minimal standards which need to be reached over the entire system running across all meal services.
- Work is needed on the care side to improve the understanding of the meal environment, the importance of foodservices (nutrition and hydration) how to work in the dining room and why monitoring residents intake is essential
- There is need for a national standard on how nutrition and hydration is planned and monitored and this goes back to standards of menu planning and the science of foodservices.
- Further examination is needed on the culture of management within the meal environment and how to create a team approach where the residents are the priority

10.3 REFLECTIONS

The heart of any home is foodservices and the dining room. Through the collective studies it has been quite evident that there is inconsistencies in the way in which foodservices are operating.

These studies highlight serious issues with the current accreditation system which underpins the running of the meal environment. For residents to be observed receiving cold meals, eating in unclean dining rooms and such poor food intake within homes having an accreditation status of three years would suggest that there is something wrong. It is not good enough to just be perfect on the accreditation audits days, these systems should be operating well every day.

At times the quality of the service was poor and each home observed in study four did receive written feedback regarding aspects of service delivery which needed to be improved. Only a few sites volunteered that improvements had been undertaken, which nevertheless was a positive aspect during the course of this study.

The ambiguity and open interpretation aspects of the standards leaves homes free to develop systems which may not deliver the best services to residents. Foodservices were often managed by

people with no foodservice background and it is easy to see why some foodservices and menus had little planning and were prone to systems which did not function consistently.

The basic science of foodservices is not supported in aged care, as homes with inconsistent use of portion size,, standard recipes or menus. On observation highlights residents often did not know what was being served and were subject to changes to the menu without notice.

Staff in aged care require support to manage the meal environment better with education and direction on how to run and co-ordinate the dining room services and how to monitor residents food and fluid intake. It is very easy to walk away from a resident who is a slow eater, easy to say they have had enough when in fact they may not. Proper co-ordination to ensure that all residents are eating and drinking enough is required.

People working in aged care homes are doing the best they can within the current regulatory framework. As discussed the meal environment system is open, flexible and leaves a home to determine the service directions and quality. What is lacking in dining rooms is direction and the expectation that someone will be monitoring residents and checking on food and fluid intake especially those that are unable to communicate, frail and on vitamised/puree thickened fluids which can compromise nutrition intake. This would require extra education provided at the Cert III level, more support within this environment and homes making a conscious effort to make nutrition and hydration a priority. It is not easy working in age care, with our most vulnerable population being cared for by staff paid at one of the lowest rates of pay, doing long hours of heavy work. And while the current assessment of the age care standards look good for the government, the amount of paper work and quality checks and balances often requires staff to spend time in front of computers filing notes, filling in audit forms and doing paper work to feed a hungry accreditation system for compliance rather than undertaking care.

The system theory is a practical framework developed and used in foodservices since the 1950's. It serves as a means of providing controlling mechanism to ensure the service delivery is of a high standards, the means to measure system performance and to put in place system improvements through feedback. The literature review with the use of the system theory highlighted that the aged care meal environment is a complex system with many aspects which would place pressure within this model. The studies have shown that the current system in place may have some disadvantages to residents and certain aspects of the system need more support in both structure of the standards, skill development and a greater understanding of the system theory and its application to the meal environment. Without a strong system it is easy to see why the results of these studies have highlighted some concerns.

For aged care to progress and improve practice more work is required to investigate areas as noted in the above future work. Work should be carried out across the meal environment and include how to better train staff, how to improve workplace culture and the understanding of the home environment. Work also needs to be around the use of menu planning strategies to improve nutritional care especially in the areas of portion size and food fortification.

Critical realism provided a framework which enable this multi method study to triangulate the results to highlight where within the foodservice system there are issues. These centred around the menu, and aspect of the system such as meal delivery temperature. The way in which the standards are constructed and their open base nature will continue to provide an unsupportive framework for the foodservice system

When observing the meal environment at times I was left wondering whose home this was, when the meal environment system was task focussed and staff worked their way through meal services methodology. Residents were the afterthought, a mere piece in a system one which did not focus on them.

REFERENCES

Abbasi, A.A., Rudman, D., 1994. Under nutrition in the Nursing Home : Prevalence, Consequences, Causes and Prevention. Nutrition Reviews 52 (4): 113-122

ACFI 2009. Review of the Aged Care Funding Instrument. Australian Government Department of Health and Ageing, 1-26

ADA report 2005. Position of the American Dietetic Association: Liberalization of the Diet Prescription Improves Quality of Life for Older Adults in Long-Term Care. Journal of the American Dietetic Association, 105: 1955-1965.

Adolphe, J.L, Whiting, S.J., & Dahl, W.J., 2009. Vitamin Fortification of Pureed Foods For Long-term Care Residents. Canadian Journal of Dietetic Practise and Research, 70(3):143-150

Aged Care Principles 2010. Reprint 8, Commonwealth of Australia, Canberra

Aged Care Standards and Accreditation Agency Ltd (ACSAA), 2010. Caring for Older Australians Submission by Aged Care Standards and Accreditation Agency Ltd : 1-11

Aghdassi, E., McArthur, M., Liu, B., McGeer, A., Simor., A, & Allard, J. P. 2007. Dietary Intake of Elderly Living in Toronto Long-Term Care Facilities: Comparison to the Dietary Reference Intake. Rejuvenation Research 10 (3): 301-309

Akner, G.,& Floistrup, H., 2003. Individual assessment of intake of energy, nutrients and water in 54 elderly multidiseased nursing-home residents. The Journal of Nutrition, Health & Aging, 7 (1): 2-11

Allard, J.P., Aghdassi, E., McArthur, M., McGeer, A., Simor, A., Abdolell, M., Stephens, D.,& Liu, B., 2004. Nutrition Risk Factors for Survival in the Elderly Living in Canadian Long-Term Care Facilities. Journal American Geriatric Society 52: 59-65

Allison, S., 2002. Institutional feeding of the elderly. Current Opinion in Clinical Nutrition and Metabolic Care, 5 :31-34

Anderson, W. 2011. Australian Dietary Guidelines Incorporating the Australian Guide to Healthy Eating. National Health and Medical Research Council Commonwealth Government Australia.

Andrews, Y.N., & Castellanos, V.H., 2003. Development of a method for estimation of food and fluid intake by nursing assistants in long-term care facilities: A pilot study. Journal of the American Dietetic Association, 103: 873-877

Archer, M., 1995. Realist Social Theory: The Morphogenetic Approach, Cambridge: Cambridge University Press

Australian Aged Care Data Base on CDROM- 2010

Australian Government Department of Social Services. Stocktake of Australia Government Subsidised Aged Care Places as at 30 June 2014. www.dss.gov.au

Bale C.W., 2009. Improving Nutritional Quality of Life for Older Adults: Bring Global Unity to the Field. Journal of Nutrition for the Elderly, 28: 3-4

Bale, C.W., Buhr, G.T., Hawk, V.H, Evanko, L.S.,& White, H.K., 2007. Providing Optimal Nutrition in the Assisted Living Environment Chapter 20, Morley, J.E., & Thomas, D.R., (2007) Geriatric Nutrition, Taylor & Francis Group. United States of America.

Ball, M.M., Whittington, F.J., Perkins, M.M., Patterson, V.L., Hollingsworth, C., King, S.V., & Combs, B.L., 2000. Quality of Life in Assisted Living Facilities : Viewpoints of Residents. The Journal of Applied Gerontology, 19 (3): 304-325

Banks, M., Ash, S, Bauer, J & Gaskill, D. 2007. Prevalence of malnutrition in adults in Queensland public hospitals and residential aged care facilities. Nutrition and Dietetics, 64: 172-178

Bhaskar, R. 1978, A realist theory of science, Harvester Press Hassocks

Barr, S.I., Chrysomilides, S.A., Willis, E.J., & Beattie, B.L., 1983. Nutrient intakes of the old elderly: A study of female residents of a long-term care facility. Nutrition Research 3: 417-431

Bartl, R., & Bunney C. 2012. Food and Nutrition Manual for Aged Care Homes. Australian Government Department of Health and Ageing.

Bartl, R., & Bunney, C. 2004. Best Practice Food and Nutrition Manual for Aged Care Facility. Australian Nursing Home and Extended Care Association (ANHECA) NSW

Barton, A.D., Beigg, C.L., MacDonald, I.A., & Allison, S.P.,2000. A recipe for improving food intakes in elderly hospitalized patients. Clinical Nutrition 19 (6): 451-454

Bates-Jensen, B.M., Schnelle, J.F., Alessi, C.A., Al-Samarrai, N.R., & Levy-Storms, L., 2004. The Effects of Staffing on In-Bed Times of Nursing Home Residents. Journal of the American Geriatrics Society, 52: 931-938

Beck, A.M., & Hansen, K.S., 2010. Meals Served in Danish Nursing Homes and to Meals-on-Wheels Clients May Not Offer Nutritionally Adequate choices. Journal of Nutrition in Gerontology and Geriatrics, 29 (1): 100-109

Beck, A.M., Damkjaer, K., & Beyer, N., 2008. Multifaceted nutritional intervention among nursing-home residents has a positive influence on nutrition and function. Nutrition 24:1073-1080.

Beck, A.M., & Ovesen, L. 2002 Body mass index, weight loss and energy intake of old Danish nursing home residents and home-care clients. Scand J Caring Sci; 16: 86-90

Bergstrom, N., & Braden, B., 1992. A Prospective Study of Pressure Sore Risk among Institutionalized Elderly. Journal American Geriatric Society 40 (8): 747-758

Berner, Y.N., Stern, F., Polyak, Z., & Dror, Y., 2002. Dietary intake analysis in institutionalized elderly: A focus on nutrient density. The Journal of Nutrition Health & Aging, 6 (4): 237-242.

Bernstein, M.A., Tucker, K.L., Ryan, N.D., O'Neill, E.F., Clements, K.M., Nelson, M.E., Evans, W.J, Fiatarone Singh, M.A., 2002. Higher dietary variety is associated with better nutritional status in frail elderly people. Journal of the American Dietetic Association. 102 (8): 1096-1104.

Berta, W., Laporte, A., Valdmanis, V., 2004. Observations on Institutional Long-Term Care in Ontario: 1996-2002. Canadian Journal of Aging, 24 (1): 71-84

Blade, M., 2002. Nutrition and the elderly in residential care. Nutrition and Food Science, 32: 174-179.

Blaum, C.S., Fries B.E., & Fiatarone, M.A.1995. Factors associated with low body mass index and weight loss in nursing home residents. The Journal of Gerontology, 50: 162-168.

Blaum, C.S., O'Neill, E.F., Clements, K.M., Fries, B.E., Fiatarone, M.A., 1997. Validity of the Minimum Data Set for assessing nutritional status in nursing home residents. American Journal of Clinical Nutrition 66: 787-794.

Blumberg, J. 1994. Nutrient requirements of the healthy elderly should there be specific RDA's? Nutrition Reviews, 52 (8): S15

Bonnel, W.B.,1993. The Nursing Home Group Dining Room: Managing the Work of Eating Journal of Nutrition For the Elderly, 13 (1):1-10

Booth, J., Leadbetter, A., Francis, M & Tolson, D., 2005. Implementing a best practice statement in nutrition for frail older people : Part 1. Nursing Older People 16 (10): 26-28

Braithwaite, J., 1998. Regulation and Quality in Aged Care : a Cross-National Perspective. Australasian Journal on Ageing, 17 (4): 172-176

Brodaty, H., Draper, B.M., & Low, L., 2003. Behavioural and psychological symptoms of dementia: a seven-tiered model of service delivery. MJA 178:231-234

Brogdon, H.G., & Alford, B.B. 1973. Food Preferences in Relation to Dietary Intake and Adequacy in a Nursing Home Population. The Gerontologist (1): 355-357

Brownie, S., 2006. Why are elderly individuals at risk of nutritional deficiency? International Journal of Nursing Practice, 12: 110-118

Bruen, W., 2005. Policy Update Aged Care in Australia: past, present and future. Australasian Journal of Ageing, 24 (3): 130-133

Buckler, D.A., Kelber, S.T. & Goodwin, J.S. 1994. The Use of Dietary Restrictions in Malnourished Nursing Home Patients. Journal American Geriatrics Society, 42, 1100-1102

Burns, R.B., 2000. Introduction to Research Methods, 4th Ed. Longman Pearson Education Australia

Campbell report. 2005. A literature review and description of the regulatory framework. Commonwealth of Australia 1-148

Campbell, 2007. Evaluation of the impact of accreditation on the delivery of quality of care and quality of life to residents in Australian Government subsidised residential aged care homes. Commonwealth of Australia, 1-119.

Carrier, N., West. G.E., & Ouellet, D. 2009. Dining experience. Foodservices and Staffing are Associated with Quality of life in elderly nursing home residents. The Journal of Nutrition Health & Aging. 13 (6): 565-570.

Carrier, N., Ouellet, D., West, G.E. 2007. Nursing Home Food Services Linked with Risk of Malnutrition. Canadian Journal of Dietetic Practice and Research, 68: 14-20

Carrier, N., West, G.E., & Ouellet, D., 2006. Cognitively Impaired Residents' Risk of Malnutrition Is Influenced by Foodservice Factors in Long-Term Care. Journal of Nutrition for the Elderly, 25 (3/4): 73-87

Cassens, D., Johnson, E.& Keelan, S. 1996. Enhancing Taste, Texture, Appearance and Presentation of Pureed Food Improved Resident Quality of Life and Weight Status. Nutrition Reviews, Jan 54 S51-S53.

Castellanos, V.H., Marra, M.V., & Johnson, P., 2009. Enhancement of Select Foods at Breakfast and Lunch Increases Energy Intakes of Nursing Home Residents with Low Meal Intakes. Journal of the American Dietetic Association, 109: 445-451

Castellanos, V.H. 2004. Food and Nutrition in Nursing Homes. Generations (Fall): 65-71

Castellanos, V.H., Butler, E., Gluch, L., & Burke, B., 2004. Use of Thickened Liquids in Skilled Nursing Facilities. Journal of The American Dietetic Association, 104: 1222-1226

Castellanos, V.H., & Andrews, Y.N., 2002. Inherent flaws in a method of estimating meal intake commonly used in long-term-care facilities. Journal of the American Dietetic Association, 102 (6): 826-830.

Chen, C.C., Schilling, L.S., & Lyder, C.H., 2001. A concept analysis of malnutrition in the elderly. Journal of Advanced Nursing, 36(1): 131-142

Chernoff, R., 2006. Chapter 19 Nutritional Support for the Older Adult. Geriatric Nutrition The Health Professional's Handbook 3rd Edition Jones and Bartlett Publishers

Chernoff, R., 1994. Meeting the Nutritional Needs of the Elderly in the Institutional Setting. Nutrition Reviews, April, 52(4): 132-136

Chisholm, A., Jensen, J., & Field, P., 2011. Eating environment in the aged-care residential setting in New Zealand :Promoters and barriers to achieving optimum nutrition. Observations of the foodservice, menu and meals. Nutrition and Dietetics 68 (2): 161-166

Chou, S., Boldy, D.P., & Lee, A.H., 2002. Resident Satisfaction and Its components in Residential Aged Care. The Gerontologist, 42 (2): 188-198

Christensson, L., Unosson, M., & Ek, A.C., 1999 Malnutrition in elderly people newly admitted to a community resident home. The Journal of Nutrition & Aging, 3 (3): 133-139.

Clark, J.E. 1998. Taste & flavour : their importance in food choice and acceptance. Proceedings of the Nutrition Society 57: 639-643.

Cluskey, M., Dunton, N., 1999. Serving meals of reduced portion size did not improve appetite among elderly in a personal-care section of a long-term-care community. Journal of the American Dietetic Association, 99 (6): 733-735

Cluskey, M., 1989. The use of pureed diets among the elderly. Dietetic Currents, 16 (4): 17-20

Collier, A 1994. Critical Realism: An Introduction to Roy Bhaskar's Philosophy, London: Verso

Connor, R.J. 1999. Is healthy eating only for the young? Nutrition & Food Science. No1 (January/February) 12-18

Cowan, D.T., Roberts, J.D., Fitzpatrick, J.M., While, A.E., & Baldwin, J., 2004. Nutritional status of older people in long term care settings: current status and future directions. International Journal of Nursing Studies 41: 225-237

Crack, J., & Crack, G., 2007. Promoting quality care for older people in meal management whose responsibility is it? Australian Journal of Advanced Nursing, 25 (1): 85-89

Crogan, N.L., Evans, B., & Velasquez, D., 2004. Measuring Nursing Home Resident Satisfaction with Food and Food Service: Initial Testing of the FoodEx-LTC. The Journals of Gerontology, 59A (4): 370-377.

Crogan, N.L., Corbett, C.F., 2002. Predicting Malnutrition in Nursing Homes Residents Using the Minimum Data Set. Geriatric Nursing 23 (4): 224-26

Crogan, N.L., Evans, B., 2001. Guidelines for Improving Resident Dining Experiences in Long-Term Care Facilities. Journal for Nurses in Staff Development 17 (5): 256-259

Crogan, N.L., Shultz, J.A. & Massey, L.K., 2001. Nutrition Knowledge of Nurses in Long-Term Care Facilities. The Journal of Continuing Education in Nursing, 32 (4): 171-176

Crogan, N.L.. & Shultz, J.A., 2000. Nursing Assistants Perceptions of Barriers to Nutrition Care for Residents in Long-Term Care Facilities. Journal for Nurses in Staff Development, 16 (5): 216-221

de Castro, J.M., & Stroebele, N., 2002. Food intake in the real world: implications for nutrition and aging. Clinics in Geriatric Medicine, 18 (4): 1-5

de Castro, J.M., 1993. Aged-related Changes in Spontaneous Food Intake and Hunger in Humans. Appetite, 21:255-272

Department of Health and Ageing (DoHA)

Commonwealth Department of Health and Aged Care 1998. "Standards and Guidelines for Residential Aged care Service Manual" (pp. S-50 & G96-98).

(DoHA 2009, p. xi) – chapter one

Department of Human Services (DoHS)
(2009) Nutrition Standards for Menu items in Victorian Hospitals and Residential Aged Care Facilities. Department of Human Services Victoria, 1-26.

Eat For Health (2013) Australian Dietary Guidelines. Commonwealth of Australia NHMRC Canberra http://www.nhmrc.gov.au

The Aged Care Accreditation Standards (2008) Evaluation of the impact of accreditation on the delivery of quality of care and quality of life to residents in Australian government-subsidised residential aged care homes. Number 4. The Aged Care Accreditation System 1-4

http://www.australiantransplantaurthoirty.gov.au/internet/main/publishing.nsf/Content

(2009) Department of Health and Aged Residential Aged Care Manual Edition one, Canberra

Desai, J., Winter, A., Young, K.W.H., & Greenwood, C.E.,2007. Changes in Type of Foodservice and Dining Room Environment Preferentially Benefit Institutionalised Seniors with Low Body Mass Indexes. Journal of the American Dietetic Association 107: 808-814

Dickerson, J.W.T., 2001. Aspects of the history of nutrition since 1876. The Journal of the Royal Society for the Promotion of Health, 121 (2): 79-84

Dietitians Association of Australia, March 2010. Submission from the Dietitians Association of Australia to the Department of Health and Ageing. Review of the Aged Care Funding Instrument.

Digby, P. 2006. Menu Assessment for Aged Care Facilities Checklist. Environment Health 1-7

DiMaria-Ghalili, R.A. & Amella, E., 2005. Nutrition in Older Adults. AJN, 105 (3): 40-50

Donini, L.M., Savina, C., & Cannella, C. 2003. Eating Habits and Appetite Control in the Elderly: The Anorexia of Aging. International Psychogeriatrics. 15 (1): 73-87

Doyle, B., 1989. The Dining Environment and Food Intake of the Elderly in Long-Term Care. Food & Nutrition News 61/1 5-6

Drewnowski, A. 1997. Taste preferences and food intake. Annu Rev Nutrition. 17: 237-253

Ducak, K., & Keller, H.H., 2011. Menu Planning in Long-Term Care: Toward Resident-centred Menus. Canadian Journal of Dietetic Practice and Research. 72 (2): e126-e133

Dunn-Walters, D.K., Howard, W.A., & Bible, J.M., 2004. The ageing gut. Mechanisms of Ageing and Development 125: 851-852.

Dunne, A., 2009. Malnutrition in care homes: improving nutritional status. Nursing & Residential Care, Sept 2009 Vol 11 (9): 437-442.

Dunne, J.L. & Dahl, W.J., 2007. A Novel Solution in Needed to Correct Low Nutrient Intakes in Elderly Long-Term Care Residents. Nutrition Reviews, 65 (3): 135-138

Dyck, M.J., 2006. Nursing Staffing and Resident Outcomes in Nursing Homes Weight Loss and Dehydration. Journal of Nursing Care Quality, 22 (1): 59-65

Easton, G., 2010. Critical realism in case study research. Industrial Marketing Management, 39:118-128

Edwards, J.S.A., & Gustafsson, I., 2008. The room and atmosphere as aspects of the meal: a review. Journal of Foodservice, 19: 22-34

Ellis, J.M., & Howe, A., 2010. The role of sanctions in Australia's residential aged care quality assurance system. International Journal for Quality in Health Care, 22 (6): 452-460.

ETSI Standards http://www.etsi.org/index.php/standards/what-are-standards

Evans, B.C., Crogan, N.L., & Shultz, J.A., 2005. The Meaning of Mealtimes - Connection to the Social world of the Nursing Home. Journal of Gerontological Nursing February: 11-17.

Fabian, M., 2001. Supplementing the normal hospital diet with fortified and unfortified snacks. Nutrition & Food Science, 31 (6): 279-285

Falkm L.W., Bisogni, C.A., & Sobal, J., 1996. Food Choice Precesses of Older Adults : A Qualitative Investigation. Journal of Nutrition Education, 28 (5): 257-265

Farrer, K; 2005. To feed a nation. A history of Australia food science and technology. CSIRO publishing 161-179.

Gall, M.J., Grimble, G.K., Reeve, N.J., Thomas, S.J., 1998. Effect of providing fortified meals and between-meal snacks on energy and protein intake of hospital patients. Clinical Nutrition 17 (6): 259-264

Gaskill, D., Isenring, E.A., Black, L.J., Hassall, S., Bauer, J.D, 2009. Maintaining Nutrition in Aged Care Residents with a Train-The-Trainer Intervention and Nutrition Coordinator. The Journal of Nutrition, Health & Aging. 13 (10): 913-917.

Gaskill, D. Black, L., Isenring, E., Hassall, S., Sanders, F., Bauer, J. 2008. Malnutrition prevalence and nutrition issues in residential aged care facilities. Australasian Journal on Aging, 27 (4): 189-194

Germain, I., Dufresne, T., Gray-Donald, K., (2006). A novel dysphagia diet improves the nutrient intake of institutionalised elders. Journal of the American Dietetic Association. 106: 1614-1623

Giampaoli, J., Khanna, S, 2000. The Use of Plate Waste to Determine Resident Food Preferences in a Long Term Care Facility. Foodservice Research International, 12: 51-57

Gibbons, M.R.D., Henry, C.J.K., 2005. Does Eating Environment Have An Effect on Food Intake in the Elderly? The Journal of Nutrition, Health & Aging, 9(1): 25-29

Gilmore, S., & Russell, C.M., 1992. Factors Affecting Meal Service in Nursing Facilities: Employee's Perceptions. Journal of Nutrition in Gerontology and Geriatrics, 11 (1): 3-14

Gloth, F.M., Tobin, J.D., Smith C. E., Meyer, J.N., 1996. Nutrient intakes in a frail homebound elderly population in the community vs. a nursing home population. Journal of the American Dietetic Association, 96 (6): 605-607

Goonan, S., Mirosa, M., & Spence, H., 2015. Systems-practice framework: An integrated approach for foodservice management. Nutrition and Dietetics, 72: 81-90

Gosney, M., 2003. Are we wasting our money on food supplements in elder care wards? Journal of Advanced Nursing, 43 (3): 275-280.

Gray-Donald, K., 1995. The frail elderly: Meeting the nutritional challenges. Journal of the American Dietetic Association, 95 (5): 538-540

Gregoire, M.B., 2013. Foodservice Organizations. A Managerial and Systems Approach. Eighth Edition Pearson Education, New Jersey USA.

Grieger, J.A., Nowson, C.A., & Ackland, L.M., 2009. Nutritional and Functional Status Indicators in Residents of a Long-Term Care Facility. Journal for the Elderly, 28 (1): 47-60

Grieger, J.A., & Nowson, C.A., 2007. Nutrient intake and plate waste from an Australian residential care facility. European Journal of Clinical Nutrition, 61: 655-663

Guigoz, V., Lauque, S., Vellas, B.J., 2002. Identifying the elderly at risk for malnutrition : the Mini Nutritional Assessment. Clinics in Geriatric Medicine 18 (4): 737-757

Gustafsson, K., Sidenvall, B., 2002. Food-related health perceptions and food habits among older women. Journal of Advanced Nursing 39 (2): 164-173

Hackes, B.L., Shanklin, C.W., Kim, Taehee & Su, A.Y., 1997. Tray service generates more food waste in dining areas of a continuing-care retirement community. Journal of the American Dietetic Association, 97 (8): 879-882

Hall, G., Wendin, K., 2008. Sensory Design of Foods for the Elderly. Ann Nutr Metab, 52 (Suppl 1): 25-28

Hartwell, H. 2009. Nutrition in Institutions. Journal of Foodservice, (20): 209-210

Herne, S. 1995. Research on food choice and nutritional status in elderly people : a review. British Food Journal 97 (9): 12-29.

Hickson, M., 2006. Malnutrition and ageing. Posgrad Med J; 82: 2-8

Hoffman, A.T., 2008. Quality of Life, Food Choice and Meal Patterns – Field Report of a Practitioner. Annals of Nutrition & Metabolism. 52 (supple 1): 20-24.

Holt, V., Nordstrom, J., & Kohrs, M.B., 1988. Changes in Food Preferences of the Elderly Over a Ten Year Period. Journal of Nutrition for the Elderly, Vol 7 (4): 23-34

Hotaling, D.L., 1992. Nutritional considerations for the Pureed Diet Texture in Dysphagia Elderly. Dysphagia 7: 81-85.

Hotaling, D.L., 1990. Adapting the Mealtime Environment: Setting the Stage for Eating. Dysphagia, 5: 77-83

Innes-Farquhar, A., 2000. Catering in nursing and residential homes. Nursing & Residential Care, December 2 (12): 588-590

Irvine, P., Mouzet, J.B., Marteau, C., Salle, A., Genaitay, M., Favreau, A.M., Berrut, G., & Ritz, P., 2004. Short-term effect of a protein load on appetite and food intake in diseased mildly undernourished elderly people. Clinical Nutrition 23: 1146-1152.

Jackson, R. 2003. Simplifying your menu. Health Care Food & Nutrition Focus. 20 (5): 1-6.

Johnson, R.M., Smiciklas-Wright, H., Soucy, I.M., Rizzo, J.A. 1995. Nutrient Intake of Nursing-Home Residents Receiving Pureed Foods or a Regular Diet. Journal of the American Geriatrics Society 43 (4): 344-348

Kayser-Jones J.S., 2006. Use of Oral Supplements in Nursing Homes: Remaining Questions. Journal of the American Geriatrics Society, 54 (6): 1002-1003

Kayser-Jones, J., 2002. Malnutrition, Dehydration, and Starvation in the Midst of Plenty: The Political Impact of Qualitative Inquiry. Qualitative Health Research, 12 (10): 1391-1405

Kayser-Jones, J., 2000. Improving the Nutritional Care of Nursing Homes Residents, Nursing Homes Long Term Care Management Oct 2000: 56-59.

Kayser-Jones, J.S., 1997. "Inadequate staffing at mealtime" Journal of Gerontological Nursing August: 14-21

Kayser-Jones, J.S., & Schell, E., 1997. The effect of staffing on the quality of care at mealtimes. Nursing Outlook, 45 (2): 64-72.

Keller, H.H., & Duizer, L.M., 2014. What Do Consumers Think of Pureed Food? Making the Most of the Indistinguishable Food. Journal of Nutrition in Gerontology and Geriatrics, 33 (3): 139-159

Keller, H., Carrier, N., Duizer, L., Lengyel, C., Slaughter, S., Steele, C., 2014. Making the Most of Mealtimes (M3) : Grounding Mealtime Interventions with a Conceptual Model. JAMDA 15: 158-161

Keller, H., Chambers, L., Niezogoda, H., & Duizer, L,. 2012. Issues Associated with the use of Modified Texture Foods. The Journal of Nutrition, Health & Aging. 16 (3): 195-200

Keller, H.H., Ostbye, T., & Goy, R., 2004. Nutrition Risk Predicts Quality of Life in Elderly Community-Living Canadians. Journal of Gerontology: Medical Sciences 59A (1): 68-74

Keller, H., 1993 Malnutrition in Institutionalized Elderly: How and Why? Journal American Geriatric Society . 41: 1212-1218

Kelly, L., 1999. Audit of food wastage: differences between a plated and bulk system of meal provision. Journal of Human Nutrition and Dietetics, 12: 415-424

Khan, M.A. 1998. Nutrition for Foodservice Managers. John Wiley & Sons Inc. Canada 155-181

Kinton, R., Ceserani, V., Foskett, D. 1996. The Theory of Catering. Hodder & Stoughton. London

Kivela, J. 1994. Menu planning for the hospitality industry. Hospitality Press Pty Ltd. Melbourne

Kral, T.V.E., Rolls, B.J., 2004. Energy density and portion size: their independent and combined effects on energy intake. Physiology & Behaviour 82: 131-138

Labossiere, R., & Bernard. M.A., 2008. Nutritional considerations in institutionalized elders. Current opinion in Clinical Nutrition and Metabolic Care, 11: 1-6

Lach D, Challenges of interdisciplinary research: reconciling qualitative and quantitative methods for understanding human-landscape systems. Environmental Management, 2014, 53:88-93.

Lammes, E, Torner, A., Akner, G., 2009. Nutrient density and variation in nutrient intake with changing energy intake in multimorbid nursing home residents. Journal of Human Nutrition and Dietetics, 22: 210-218

Lan, S.J., Justice, C.L., 1991. Use of modified diets in nursing homes, Journal of the American Dietetic Association, 91 (1): 46-51

Lee, K., Remig, V.M., & Shanklin, C.W., 2008. Competencies and Skills Required for Foodservice Directors in Assisted Living Facilities. The Journal of Foodservice Management, 1: 1-13

Lengyel, C.O., Whitting, S.J., Zello, G.A., 2008. Nutrient Inadequacies Among Elderly Residents of Long-term Care Facilities. Canadian Journal of Dietetic Practice and Research, 69 (2): 82-88

Lengyel, C.O., Smith, J.T., Whiting, S.J., Zello, G.A., 2004. A Questionnaire to Examine Food Service Satisfaction of Elderly Residents in Long-Term Care Facilities. Journal of Nutrition for the Elderly, 24(2): 5-18

Lengyel, C.O., Zello, G., Berenbaum, S.L., Henry, C.J. Whiting, S.J. 2003. A model for food service delivery and quality of life in long-term care facilities. M. Joseph Sirgy et al (eds) Advances in Quality-of-Life Theory and Research, 3-12 Kluwer Netherlands

Leppert, S., 2007. Bulk Foodservice : A Nutrition Care Strategy for High-Risk Dementia Residents. Journal of the American Dietetic Association, 107 (5): 814-815

Leslie, W.S., Lean, M.E.J., Woodward, M., Wallace, F.A., Hankey, C.R., 2006. Unidentified under-nutrition: dietary intake and anthropometric indices in a residential care home population. Journal Human Nutrition Diet, 19: 343-347.

Levinson, Y., Dwolatzky, T., Epstein, A., Adler, B., Epstein, L., 2005. Is it Possible To Increase Weight and Maintain the Protein Status of Debilitated Elderly Residents of Nursing Homes? Journal of Gerontology 60A (7): 878-881.

Lirette, T., Podovennifoff, J., Wismer, W., Tondu, L., & Klatt, L., 2007. Food Preferences and Meal Satisfaction of Meals on Wheels Recipients. Canadian Journal of Dietetic Practice Research, 68: 214-217.

Lorefalt, B., Wissing, U., Unosson, M., 2005. Smaller but energy and protein-enriched meals improve energy and nutrient intakes in elderly patients. The Journal of Nutrition, Health & Aging, 9(4): 243-247

McCaffree, J., 2009. Facility Menu Planning Step by Step. Journal of the American Dietetic Association 109 (8): 1337-1340.

McDonald, T, 2009. Quality performance systems in aged care services. Journal of Care Services Management, 3(4): 408-417

Macquarie Dictionary 1999. 3rd Edition Macquarie University Sydney Australia

Manthorpe, J., Watson, R., 2003. Poorly served? Eating and dementia. Journal of Advanced Nursing, 41 (2): 162-169

Marra, M.V., Wellman, N.S., 2008. Multivitamin-Mineral Supplements in the Older Americans Act Nutrition Program: Not a One-Size-Fits-All Quick Fix. American Journal of Public Health, 98(7): 1171-1176

Marquis, R. 2002. Quality in aged care : a question of relational ethics? Australasian Journal of Ageing 21 (1): 25-29

Massoulard, A., Bonnabau, H., Gindre-Poulvelarie, L., Baptistev, A., Preux, P.M., Villemonteix, C., Javerliat, V., Fraysse, J.L.& Desport, J.C. 2011. Analysis of the food consumption of 87 elderly nursing home residents, depending on food texture. The Journal of Nutrition, Health & Aging. 15 (3): 192-195

Matthews, L.E. 1992. Prevention of Malnutrition is Everybody's Business. Journal of Nutrition in Gerontology and Geriatrics 11(1): 79-84

Mathews, L.E., 1985. Developing a Menu to Meet Resident Needs. Journal of Nutrition for the Elderly, 5 (1): 79-82

Mathey, M.A.M., Vanneste, V.G.G., de Graaf, C., de Groot, L.C.P.G.M & van Staveren, W.A., 2001. Health Effect of Improved Meal Ambiance in a Dutch Nursing Home : A 1-year Intervention Study. Preventive Medicine, 32: 416-423.

Mathey, M.A.M., Siebelink, E., de Graaf, C., van Staveren, W.A., 2001. Flavour Enhancement of Food Improves Dietary Intake and Nutritional Status of Elderly Nursing Home Residents. Journal of Gerontology, 56A (4): M200-M205

MDS- RCA Training Manual, 2004. Training Manual for the MDS Resident Assessment Tool MDS-RCA, The Main Department for Human Services Bureau of Medical Services.

Mifli, M 2000. Menu Development and Analysis. Ideas & Trends Hotel Online, June 1-14.

Morley, J.E., & Silver, A.J. 1995. Nutrition issues in Nursing Home Care. Annals of Internal Medicine, 123 (11): 850-859

Morse, J.M. 1991. "Approaches to Qualitative-Quantitative Methodological Triangulation" Nursing Research, 40 (2):120-123

Municie, H.L., Carbonetto, C.,M 1982. Prevalence of Protein-Caloric Malnutrition in an Extended Care Facility. The Journal of Family Practice, 14 (6): 1061-1064

Munikrishappa, D. 2007. Nutrition Management in Nursing Homes. Geriatric Nutrition Chapter 19: 323-340. CRC Press Taylor & Francis Group United States of America.

National Minimum Standards for Care Homes for Older People. March 2004 – Welsh Assembly Government. www.csiw.wales.gov.uk/docs/nmscarehomes_olderpoeple_revised_e.pdf

New South Walse Food Authority 2011. Vulnerable Population Food Safety

New Zealand Menu Audit Tool for Aged Care Facilities. (April 2008). New Zealand Dietetics Association

Nguyen, N.H., Flint, D.M., Prinsley, D.M., Wahlqvist, M.L., 1985. Nutrient intakes of dependent and apparently independent nursing home patients. Human Nutrition : Appl Nutrition, 39A: 333-338.

Nichols, P.J., Porter, C., Hammond, L., & Arjmandi, B.H., 2002. Food intake may be determined by plate waste in a retirement living centre. Journal of the American Dietetic Association, 102 (8): 1142-1144

Nijs, K., de Graaf, C., van Staveren, W.A., de Groot, L.P.G.M., 2009. Malnutrition and Mealtime Ambiance in Nursing Homes. Journal American Medical Directors Association, 10: 226-229

Nijs, K.A.N.D., de Graaf, C., Kok, F.J., van Staveren, W.A., 2006. Effect of family style mealtimes on quality of life, physical performance, and body weight of nursing home residents : cluster randomised controlled trial. British Medical Journal, May 1-5

Nowson, C.A. 2009. Nutrition challenges in the Elderly. Australian Doctor March: 25-32

Nowson, C.A., Sherwin, A.J., McPhee, J.G., Wark, J.D., & Flicker, L., 2003. Energy, protein, calcium, vitamin D and fibre intakes from meals in residential care establishments in Australia. Asia Pacific Journal of Clinical Nutrition, 12 (2): 172-177

Nutrient Reference Values for Australia and New Zealand Executive Summary. 2005. Australian Government Department of Health and Ageing National Health and Medical Research Council. Commonwealth of Australia.

Nutrition Care and Hydration Program. 2010. Aged Care Standards of Long Term Care Residents, Ministry of Health Ontario Canada http://www.e.lans.gov.on.ca/html/source/rep/

Obert, J.C., & Burr, M.E., 1964. How can we improve food service in nursing homes? Food Service Management, 54 (6): 932-939

Omran, L.M., Aneed, W., 2007. Nutritional and Gastrointestinal Function. United State of America Taylor & Frances group

O'Neill, M 2010 The Future of Aged Care in Australia. National Seniors Australia Access Economics 1-58

O'Reilly, M.T., Courtney, M., Edwards, H., 2007. How is quality being monitored in Australian residential aged care facilities? A Narrative review. International Journal for Quality in Health Care 19 (3): 177-182

Palacios-Ceria, D., Losa-Iglesias, M.E., Cachon-Perez, J.M., Gomez-Perez, D., Gomez-Calero, C.,& Fernandez-de-las-Penras, C., 2013. Is the mealtime experience in nursing homes understood? A qualitative study. Geriatr Gerontol Int, 13: 482-489

Parker, B.A., Chapman, I.M., 2004. Food intake and ageing – the role of the gut. Mechanisms of Ageing and Development 125: 859-866

Pauly, L., Stehle, P., Volkert, D., 2007. Nutritional situation of elderly nursing home residents. Z Gerontol Geriat, 40: 3-12

Pearson, A., Fitzgerald, M., 2003. Mealtimes in Nursing Homes - The Role of Nursing Staff. Journal of Gerontological Nursing, 29: 40-47

Perry, L., 1997. Nutrition: a hard nut to crack. An exploration of the knowledge, attitudes and activities of qualified nurses in relation to nutritional nursing care. Journal of Clinical Nursing, 6: 315-324.

Pokrywka, H.S., Koffler, K.H., Remsburg, R.E., Bennett, R.G., Roth, J., Tayback, M & Wright, J.E., 1997. Accuracy of Patient Care Staff in Estimating and Documenting Meal Intake of Nursing Home residents. Journal of the American Geriatrics Society 45(10): 1223-1227

Polit, D.F., Hungler, B.P. 1999. Nursing Research Principle and Methods. 6th Edition. Lippincott New York

Productivity Commission Inquiry Report 2011, Caring for Older Australian, Report No. 53, Final Inquiry Report, Canberra

Puckett, R.P., 2013. Foodservice Manual for Health Care Institutions(4th Ed). Jossey-Bass John Wiley & Sons Inc USA

QLD Std 2011 Queensland Health Nutrition Standards for Meals and Menus. State-wide Foodservice Policy and Planning, Queensland Health, 1-71

Racho, C., 2010. Trends in foodservice. Long-Term Living, Sept 59(9): 34-36

Rapp, E., 2008. Application of the meal environment as a tool to improve health? Journal of Foodservice (19): 80-86

Rauen, M.S., Moreira, E.A.M., Calvo, M.C.M., Lobo, A.S., 2006. Oral Condition and Its Relationship to Nutrition Status in the Institutionalized Elderly Population. Journal of the American Dietetic Association. 106: 1112-1114.

Remsburg, R.E., Luking, A., Baran, P., Radu, C., Pineda, D., Bennett, R.G., Tayback, M., 2001. Impact of a buffet-style dining program on weight and biochemical indicators of nutritional status in nursing home residents: A pilot study. Journal of the American Dietetic Association, 101 (12): 1460-1463

Richie, C.S., 2002. Oral Health, taste and olfaction. Clinics in Geriatric Medicine, 18 (4): 27-32

Rikkert, G.M.O., Rigaud, A., 2003. Malnutrition research : high time to change the men. Age and Ageing, May 32(3): 241-243

Rodgers, S. 2005. Selecting a food service system : a review. International Journal of Contemporary Hospitality Management 17 (2): 157-169

Saletti, A., Lindgren, E.Y., Johansson, L. Cederholm., 2000. Nutritional Status According to Mini Nutritional Assessment in an Institutionalised elderly Population in Sweden. Gerontology, May/Jun :46 (3): 139-145

Saunders, M.J., Stattmiller, S.P., Kirk, K.M., 2007. Oral Health Issues in the Nutrition of Institutionalized Elders. Journal of Nutrition in Gerontology and Geriatrics 26 (3): 39-58

Sayers, A 2000. Realism and social science. London Sage.

Schell, E.S., Kayser-Jones, J., 1999. The Effect of Role-Taking Ability on Caregiver-Resident Mealtime Interaction. Applied Nursing Research 12 (1): 38-44

Scherer, S, 2002. Australian Society for Geriatric Medicine. Position Statement No 10. Residential Aged Care from the Geriatrician's Perspective. Australian Asian Journal of Ageing. Vol 21 (1): 46-51

Schmid, A., Weiss M., & Heseker, H., 2003. Recording the nutrient intake of nursing home residents by food weighing method and measuring the physical activity. The Journal of Nutrition, Health and Aging, 7(5): 294-295

Sempos, C.T., Johnson, N.E., Elmer, P.J, Allington, J.K., & Matthews, M.E., 1982. A dietary survey of 14 Wisconsin nursing homes. Journal of the American Dietetic Association 81: 35-40

Sharp, K., Ward, L., Cichero, J., Sopade, P., & Halley, P., 2007. Thickened Fluids and Water Absorption in Rats and Humans. Dysphagia, 22: 193-203

Shahar, S., Chee, K.Y., Chik, W.C.P.W, 2002. Food intakes and preferences of hospitalised geriatric patients. BMC Geriatrics, 2 (3): 1-6

Shatenstein, B,M Claveau, D,M & Ferland, G., 2002. Visual observation is a valid means of assessing dietary consumption among older adults with cognitive deficient in long term care setting. Journal of the American Dietetic Association, 102 (2): 250-252

Shatenstein, B., & Ferland, G., 2000. Absence of nutritional of clinical consequences of decentralized bulk food portioning in elderly nursing home residents with dementia in Montreal. Journal of the American Dietetic Association, 100 (11): 1354-1360

Sherwin, A.J., Nowson, C.A., Mcphee, J., Alexander, J.L, Wark, J.D., Flicker, L., 1998. Nutrient intake at meals in residential care facilities for the aged: validated visual estimation of plate waste. Australian Journal of Nutrition and Dietetics, 55 (4): 188-193

Shultz, J.A., Crogan, N.L., Evans, B.C., 2005. Organizational Issues Related to Satisfaction with Food and Food Service in the Nursing Home from the Resident's Perspective. Journal of Nutrition for the Elderly, 24(4): 39-55

Sidenvall, B., Fjellstrom, C.,& Ek, A., 1996. Cultural perspectives of meals expressed by patients in geriatric care. Int J Nurs Stud, 33(2): 212-222

Simmons, S.F., Lam, H.Y., Rao, G., Schnelle, J.F., 2003. Family Members' Preferences for Nutrition Interventions to Improve Nursing Homes Residents' Oral Food and Fluid Intake. J Am Geriatr Soc 51: 69-74

Simmons, S.F., Lam, H.Y., Schnelle, J.F., 2002. Accuracy of minimum data set in identifying residents at risk for under nutrition. Oral intake and food complaints. Journal of the American Medical Directors Association, 2: 140-145.

Simmons, S.F., Babineau, S., Garcia, E, Schnelle, J.F., 2002. Quality Assessment in Nursing Homes by Systematic Direct Observation :Feeding Assistance. The Journal of Gerontology, 57A (10): M665-M671

Simmons, S.F., Reuben, D., 2000. Nutritional Intake Monitoring for Nursing Home Residents: A Comparison of Staff Documentation, Direct Observation, and Photography Methods. Journal of the American Geriatrics Society, 48 (2): 209-213

Singh, D.A. 2010. Effective Management of Long-Term Care Facilities. 2nd Ed. Jones & Bartlett United Kingdom

Skates, J.J., Anthony, P.S., 2012. Identifying Geriatric Malnutrition in Nursing Practice. Journal of Gerontological Nursing, 38 (3) : 18-27

Smoliner, C., Norman, K., Scheuflel, R., Hartig, W., Pirlich, M., Lochs, H., 2008. Effects of food fortification on nutritional and functional status in frail elderly nursing home residents at risk of malnutrition. Nutrition, 24: 1139-1144.

Spears, M.C. 2000. Foodservice Organisations A Managerial and Systems Approach 4th Ed. Prentice-Hall USA.

Speroff, B.A. Davis, K.H., Dehr, K.L., Larkins, K.N. 2005. The Dining Experience in Nursing Homes. North Carolina Medical Journal 66 (4): 292-295

SPSS Student Version 18 Chicago IL USA

Steel, C.M., Grenwood C., Ens, I., Robertson, C., & Seidman-Carlson, R., 1997. Mealtime Difficulties in a Home for the Aged: Not Just Dysphagia. Dysphagia 12: 43-50

Strobele, N., De Castro, J.M., 2004. Effect of Ambience on Food Intake and Food Choice. Nutrition, 20: 821-838

Sullivan, D.H., Johnson, L.E., Bopp, M.M., & Roberson, P.K. 2004. Prognostic Significance of Monthly Weight Fluctuations Among Older Nursing Home Residents. The Journal of Gerontology June 59A (6): 633-638.

Suominen, M., Muurinen, S., Routasalo, P., Soini H., Suur-Usk, I., Peiponen, A., Finne-Soveri, H., Pitkala, K.H., 2005. Malnutrition and associated factors among aged residents in all nursing homes in Helsinki. European Journal of Clinical Nutrition. 59: 578-583

Suominen, M., Laine, A., Routasalo, P., Pitkala, K.H., Rasanen, L., 2004. Nutrient content of served food, nutrient intake and nutritional status of residents with dementia in a Finnish nursing home. The Journal of Nutrition, Health & Aging, 8 (4): 234-238

The quality agency

Results and process guide – Results and processes in relation to the expected outcomes of the Accreditation Standards 2005. Parramatta Sydney Australia

Assessment module 7 Nutrition, hydration, oral and dental care 2011 Parramatta Sydney Australia

Thein, H., Gomes, T., Krahn, M.D., Wodchis, W.P., 2010. Health status utilities and the impact of pressure ulcers in long-term care residents in Ontario. Quality Life Research, 19, 81-89

Thomas, D.R., Ashmen, W., Morley, J.E., & Evans, W.J. 2000. Nutritional Management in Long-Term Care : Development of a Clinical Guideline. The Journal of Gerontology, 12 M725-734.

Thomas, D.R., Verdery, R.B., Gardner, L., Kant, A., & Lindsay, J., 1991. A Prospective Study of Outcome from Protein-energy Malnutrition in Nursing Homes Residents. Journal of Parenteral and enteral nutrition, 15 (4): 400-404

Thomas, D. R., 2007. Drug-nutrient interactions Chapter 29. Morley, J.E., Thomas, D.R., 2007. Geriatric Nutrition. Taylor and Francis Group United States of America

Thompson, K., Mayerson, D., 2005. Menu planning in Long Term Care A comprehensive Guide. Toronto Canada

Traster, D., 2013. Foundations of Menu Planning. Pearson United States of America

Truswell, A.S. 2009. Dietary guidance for older Australians. Nutrition and Dietetics, 66 243-248

Ullrich, S., Buckley, J., Esterman, A., & Crichton, J., 2014. An exploratory study of meal tie experiences of older people with dysphia. Journal of ageing research and clinical practice, 3(4): 229-236

Ullrich S., McCutcheon, H., 2008. Nursing practice and oral fluid intake of older people with dementia. Journal of Clinical Nursing, 17: 2910-2919

Part 483 – Requirements for States and Long Term Care Facilities. Electronic Code of Federal Regulations. United states standards

http://www.ecfr.gov/cgi-bin/text-idx?SID=6a031435759c91a6ee58c1db2ae632eb&no

Vaden, A.G.A. 1980. Model for evaluating the foodservice system. Manhattan : Kansas State University.

Vailas, L.I., Nitzke, S.A., 1998. Food Enjoyment Scale for Older Adults : Development and Application in a Wisconsin Population. Journal of Nutrition for the Elderly 17 (3): 59-64

Vellas, B., Lauque, S., Andrieu, S., Nourhashemi, F., Rolland, Y., Baumgartner, R., Garry, P., 2001. Nutrition assessment in the elderly. Current Opinion in clinical Nutrition and Metabolic Care, 4: 5-8

Vincent, E., 2008. Ongoing Nutrition Assessment, Menu Modification, and Personal Service Improve Food Consumption in Assisted-Living Facilities. Journal of the American Dietetic Association, 108 (5): 792-793

Volkert, D., Frauenrath, C., Micol, W., Kruse, W., Oster, P., Schlierf, G., 1992. Nutritional status of the very old: anthropometric and biochemical findings in apparently healthy women in old people's homes. Aging (Milano) 4: 21-28

Walls, A.W.G., Steele, J.G., 2004. The relationship between oral health and nutrition in older people. Mechanisms of Ageing and Development 125: 853-857

Wahlqvist, M.L. 1988 (3rd Edition). Food & Nutrition in Australia. Melbourne. Thomas Nelson Australia.

Wan, T.T. H., Breen, G, Zhang, N.J. & Unruh, L., 2010. Improving the Quality of Care in Nursing Homes – An Evidence-Based Approach. The John Hopkins University Press, Baltimore USA.

Watson, R., Green S.M., 2006. Feeding and dementia : a systematic literature review. Journal of advanced Nursing 54 (1): 86-93.

Weekes, C.E., 2008. The effect of protected mealtimes on meals interruptions, feeding assistance, energy and protein intake and plate waste. Proceedings of the Nutrition Society, 67: E119

Wellman, N.S. 1999. Developing a Nutrition Care Plan for Residents at Risk. Nursing Homes, 48 (1): 60-63

Wendland, B.E., Greenwood, C.E., Weinberg, I, & Young, K.W.H., 2003. Malnutrition in Institutionalized Seniors: The Iatrogenic Component. Journal of American Geriatrics Society 51: 85-90

West, G.E., Ouellet, D., & Ouellette, S., 2003. Resident and Staff Ratings of Foodservices in Long-Term Care: Implications for Autonomy and Quality of Life, 22 (1): 57-75

Whelan, K., 2000. Inadequate fluid intakes in dysphagic acute stroke. Clinical Nutrition, 20(5): 423-428

Wynn D W and Williams C K, Principles of conducting critical realist case study research in information systems, Management Information Systems Quarterly, 2012, 36 (3); 787-810

Wiener, J.M., Tilly, J., Howe, A., Doyle, C., Cuellar, A.E., Campbell, J & Ikegami, N., 2000 Quality Assurance for Long-term Care. The Experiences of England, Australia, Germany and Japan. Washington, DC: AARP. http://www.aarp.org/ppi

Chambers Dictionary, 2000. Scotland.

Williams, P. 2012. DAA Scoping Project : Development of Nutrition and Menu Planning Standards for Residential Aged Care Facilities in Australia and New Zealand. 1-50. Dietitians Association of Australia.

Williams, P.G., 1996. Vitamin retention in cook/chill and cook/hot-hold hospital foodservices. Journal of the American Dietetic Association, 96 (5): 490-498

Wilson, A., Evans, S., Frost, G., 2000. A comparison of the amount of food served and consumed according to meal service system. Journal Human Nutrition Dietetics, 13: 271-275

Winterburn, S, 2009. Resident's choice of and control over food in care homes. Nursing Older People April 21 (3): 34-37

Wood & Harge 1968. Menu Planning, Food Standards, and Services Chapter Two

Wright, L., Cotter, D., Hickson, M., Frost, G., 2005. Comparison of energy and protein intakes of older people consuming a texture modified diet with a normal hospital diet. Journal Human Nutrition and Dietetics. 18: 213-219

Wright, O.R.L., Connelly, L.B., Capra, S., Hendrikz, J., 2011. Determinants of foodservice satisfaction for patients in geriatrics/rehabilitation and residents in residential aged care. Health Expectations, 1-15

Wright O.R.L., Capra, S., Connelly, L.B., 2010. Foodservice satisfaction domains in geriatrics, rehabilitation and aged care. The Journal of Nutrition, Health & Aging, 14 (9): 775-780.

APPENDICES

Appendix one
Accreditation Standards

Accreditation Standards

Standard 1

Management systems, staffing and organisational development

Principle: Within the philosophy and level of care offered in the residential care service, management systems are responsive to the needs of residents, their representatives, staff and stakeholders, and the changing environment in which the service operates.

Intention of standard: This standard is intended to enhance the quality of performance under all accreditation standards, and should not be regarded as an end in itself. It provides opportunities for improvement in all aspects of service delivery and is pivotal to the achievement of overall quality.

Expected outcome:

1.1 Continuous improvement
The organisation actively pursues continuous improvement.

1.2 Regulatory compliance
The organisation's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, professional standards and guidelines.

1.3 Education and staff development
Management and staff have appropriate knowledge and skills to perform their roles effectively.

1.4 Comments and complaints
Each resident (or his or her representative) and other interested parties have access to internal and external complaints mechanisms.

1.5 Planning and leadership
The organisation has documented the residential care service's vision, values, philosophy, objectives and commitment to quality throughout the service.

1.6 Human resource management
There are appropriately skilled and qualified staff sufficient to ensure that services are delivered in accordance with these standards and the residential care service's philosophy and objectives.

1.7 Inventory and equipment
Stocks of appropriate goods and equipment for quality service delivery are available.

1.8 Information systems
Effective information management systems are in place.

1.9 External services
All externally sourced services are provided in a way that meets the residential care service's needs and service quality goals.

Standard 2

Health and personal care

Principle: Residents' physical and mental health will be promoted and achieved at the optimum level, in partnership between each resident (or his or her representative) and the health care team.

Expected outcome:

2.1 Continuous improvement
The organisation actively pursues continuous improvement.

2.2 Regulatory compliance
The organisation's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, professional standards and guidelines, about health and personal care.

2.3 Education and staff development
Management and staff have appropriate knowledge and skills to perform their roles effectively.

2.4 Clinical care
Residents receive appropriate clinical care.

2.5 Specialised nursing care needs
Residents' specialised nursing care needs are identified and met by appropriately qualified nursing staff.

2.6 Other health and related services
Residents are referred to appropriate health specialists in accordance with the resident's needs and preferences.

2.7 Medication management
Residents' medication is managed safely and correctly.

2.8 Pain management
All residents are as free as possible from pain.

2.9 Palliative care
The comfort and dignity of terminally ill residents is maintained.

2.10 Nutrition and hydration
Residents receive adequate nourishment and hydration.

2.11 Skin care
Residents' skin integrity is consistent with their general health.

2.12 Continence management
Residents' continence is managed effectively.

2.13 Behavioural management
The needs of residents with challenging behaviours are managed effectively.

2.14 Mobility, dexterity and rehabilitation
Optimum levels of mobility and dexterity are achieved for all residents.

2.15 Oral and dental care
Residents' oral and dental health is maintained.

2.16 Sensory loss
Residents' sensory losses are identified and managed effectively.

2.17 Sleep
Residents are able to achieve natural sleep patterns.

Aged Care Standards and Accreditation Agency Ltd CP_BR_00469 V1.2

Standard 3

Resident lifestyle

Principle: Residents retain their personal, civic, legal and consumer rights, and are assisted to achieve active control of their own lives within the residential care service and in the community.

Expected outcome:

3.1 Continuous improvement
The organisation actively pursues continuous improvement.

3.2 Regulatory compliance
The organisation's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, professional standards and guidelines, about resident lifestyle.

3.3 Education and staff development
Management and staff have appropriate knowledge and skills to perform their roles effectively.

3.4 Emotional support
Each resident receives support in adjusting to life in the new environment and on an ongoing basis.

3.5 Independence
Residents are assisted to achieve maximum independence, maintain friendships and participate in the life of the community within and outside the residential care service.

3.6 Privacy and dignity
Each resident's right to privacy, dignity and confidentiality is recognised and respected.

3.7 Leisure interests and activities
Residents are encouraged and supported to participate in a wide range of interests and activities of interest to them.

3.8 Cultural and spiritual life
Individual interests, customs, beliefs and cultural and ethnic backgrounds are valued and fostered.

3.9 Choice and decision making
Each resident (or his or her representative) participates in decisions about the services the resident receives, and is enabled to exercise choice and control over his or her lifestyle while not infringing on the rights of other people.

3.10 Resident security of tenure and responsibilities
Residents have secure tenure within the residential care service, and understand their rights and responsibilities.

Standard 4

Physical environment and safe systems

Principle: Residents live in a safe and comfortable environment that ensures the quality of life and welfare of residents, staff and visitors.

Expected outcome:

4.1 Continuous improvement
The organisation actively pursues continuous improvement.

4.2 Regulatory compliance
The organisation's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, professional standards and guidelines, about physical environment and safe systems.

4.3 Education and staff development
Management and staff have appropriate knowledge and skills to perform their roles effectively.

4.4 Living environment
Management of the residential care service is actively working to provide a safe and comfortable environment consistent with residents' care needs.

4.5 Occupational health and safety
Management is actively working to provide a safe working environment that meets regulatory requirements.

4.6 Fire, security and other emergencies
Management and staff are actively working to provide an environment and safe systems of work that minimise fire, security and emergency risks.

4.7 Infection control
An effective infection control program.

4.8 Catering, cleaning and laundry services
Hospitality services are provided in a way that enhances residents' quality of life and the staff's working environment.

Level 9, 111 Phillip Street, Parramatta NSW 2150
PO Box 773 Parramatta NSW 2124
1800 288 025
Email: national@accreditation.org.au
www.accreditation.org.au






Appendix two

Standards, expected outcomes and module seven

2.10 Nutrition and hydration	4.8 Catering Cleaning and Laundry Services	Results and process guide 2.10	Results and process guide 4.8	Module 7
Expected Outcome Residents receive adequate nourishment and hydration.	**Expected Outcome** Hospitality services are provided in a way that enhances residents' quality of life and the staff's working environment.	Residents receive adequate nourishment and hydration The focus of this expected outcome is 'results for residents'	Hospitality services are provided in a way that enhances residents' quality of life and the staff's working environment. The focus of this expected outcome is 'results for residents (and others)'	Nutrition, hydration, oral and dental car
Preamble This Expected Outcome addresses the food and fluid requirements of residents. Consideration should be given to the physical and mental abilities of each resident and their nutritional requirements. A variety of food and fluids should be available to meet the health needs of the resident as well as any specific cultural or religious requirements.	**Preamble** Hospitality services have a major impact on a resident's quality of life within a service. In catering services, there are two main issues: • the relaxed enjoyment of a variety of appropriate food that meets residents' nutritional requirements and food preferences and • adherence to good hygiene practice. Cleaning and laundry services focus on systems that efficiently and reliably deliver clean linen as required and maintain general cleanliness, with an emphasis on infection control.	**Results** • Management demonstrates its residents receive adequate nutrition and hydration • Residents/representative confirm they are satisfied with the home's approach to meeting residents' nutrition and hydration needs and associated support needs.	**Results** • Hospitality service are provided in a manner which is friendly and generous toward residents. • Management demonstrated its hospitality services are provide din a way that enhances residents' quality of life and the working environment of staff • Residents/representatives confirm the effectiveness of the home's hospitality services in meeting their needs and preferences	**Aspect one** The home is proactive in ensuring quality of care and services regarding nutrition, hydration, oral and dental care with improvements being made in consultation with residents, representatives and staff. **Aspect two** There is initial and ongoing assessment of needs and preferences in relation to the home's provision or nutrition, hydration, oral and dental services. **Aspect three** Residents' nutrition, hydration, oral and dental care needs are actioned.
Policies and practices provide:	**Policies and practices provide:**			

2.10 Nutrition and hydration	4.8 Catering Cleaning and Laundry Services	Results and process guide 2.10	Results and process guide 4.8	Module 7
(a) that residents' nutrition and hydration needs are assessed, documented, regularly reviewed and acted upon; (b) that residents are offered a varied, healthy and well-balanced diet that takes individual preferences into account; (c) that residents receive sufficient food and fluid to meet their nutritional requirements; (d) that residents are assessed for and are provided with assistive devices that enhance the resident's ability to meet their nutrition and hydration needs; (e) that residents are assisted to maintain their dietary customs according to their religious and cultural beliefs; and (f) that residents' swallowing is regularly assessed, documented and	(a) for catering and menu planning to ensure that quality and variety of food is maintained and is regularly reviewed; (b) Resident participation in menu planning and food presentation; (c) That expert dietary advice is sought when necessary; (d) Assessment and action on an individual resident's preferences; (e) For safe and correct food purchasing, storage, handling, preparation and serving; (f) Safe and sanitary disposal of unused food and other waste; (g) That equipment used is fit for the purpose intended and well maintained, and that staff are trained in its use; (h) That the dining environment is conducive to the relaxed, pleasant			

.10 Nutrition and ydration	4.8 Catering Cleaning and Laundry Services	Results and process guide 2.10	Results and process guide 4.8	Module 7
reviewed, and that food and fluids of appropriate texture are provided.	and social enjoyment of food.			
:onsiderations • Procedures for identifying, assessing, documenting, managing and reviewing each resident's nutrition and hydration requirements and deficits that may affect eating and drinking • Consultation with each resident or their representative in the development and review of the care plan • Resident care plan details the resident's individual needs and how these will be managed • Outcomes are regularly reviewed, documented and acted upon • Staff awareness of the care needs of residents and documentation that identifies action taken • Resident information	**Consideration** • Documented procedures and guidelines for catering and menu planning • Regular review of catering, and menu planning with input from residents and staff • Expert dietary advice obtained, when appropriate (for example, through staff or visiting dietician, public hospitals, phone or fax communication) • Menu rotation to ensure variety in accordance with relevant guidelines • Meals served at appropriate times • Refreshment and snack available • Resident information includes meal times • Menu updated	**Consider** How the home ensures regular assessments of each resident's nutrition and hydration needs are conducted and communicated as per the general care process. For example, how the home ensures the identification of the resident's specific needs and preferences: • There is a systematic approach to assessing needs that involves appropriate professional and a multidisciplinary approach • Being aware of any cultural, religious and personal dietary preferences • Identifying any food allergies • Monitoring general health and body weight • Monitoring fluid intake • Monitoring the effects on medication • Monitoring skin integrity, texture and hydration state • And monitoring swallowing difficulties • Responding to needs for assistance and assistive	**Consider** How the home ensures regular assessments of residents' needs and preferences are conducted and communicate regarding hospitality services. For example: • Residents/representative are informed of the hospitality services offered • Residents/representatives are staff can provide feedback about their individual needs, on the services provided and the manner of their provision How the home plans the catering, cleaning and laundry service to be provide in line with residents assessment and consultation. For example: • The standard of catering service to be delivered. Eg choice, quality and quantity • Specific individual residents' needs and preferences	**Consideration aspect one** • Management demonstrates how improvements in nutrition, hydration, oral and dental care are implemented and evaluated • There is a link between resident, nutrition, hydration, oral and dental care needs and preferences, resident/representative feedback and the home's continuous improvement activities • The home has monitoring systems in place to identify and where possible, prevent issues in nutrition, hydration, oral and dental care from arising and recurring **Considerations aspect two** The home ensures regular assessment of the residents' nutrition, hydration, oral and dental care needs are conducted and documented by appropriate

2.10 Nutrition and hydration	4.8 Catering Cleaning and Laundry Services	Results and process guide 2.10	Results and process guide 4.8	Module 7
indicates the types of foods (including all meals and snacks) and fluids that are available to residents, and the choices that are offered • Availability of dietary information for the development and review of menus to ensure residents' needs are met • Procedures for developing and reviewing menus • Identification of the physical, psychological and behavioural deficits in the ability to initiate eating and drinking • Identification of services and health professionals available to assist in meeting residents' nutrition and hydration requirements • Identification of the assistive devices that are available for residents to use • Documentation identifies residents who have an eating or	regularly • Regular communication and consultation between residents and catering staff on menu planning, food presentation and individual preferences, including where the resident prefers to eat (for example, through resident feedback, individual resident assessments meetings, surveys etc) • Residents with special needs are identified and consulted in how those needs are to be met • Assessment, on admission, of each resident's dietary preferences for menu planning • A system for monitoring, documenting and reviewing each resident's dietary preferences (diet	devices How nutrition and hydration plans are developed and communicated to the relevant staff a per the general care process. For example: • There is a multidisciplinary approach involving appropriate professional as required • Oral dental health checks are performed a necessary • Specific direction for feeding an assisting • Texture and consistency of foods and fluids • Form in which medication should be administered • Specific communication with the kitchen and dining staff as appropriate Are nutrition and hydration provided consistent with the planning? For example: • Food and fluids are appropriate nutritional balance, texture and volume • The provision of appropriate resources to assist residents intake , eg feeding devices, staff assistance How does the home regularly	• Relevant instruct by medical and health professionals How the home provides hospitality services consistent with its planning: • Residents' needs and preferences are communicate to relevant people • Hospitality services are provide in accordance with health and hygiene standards, in particular infection control requirements How the home regularly review its hospitality services: • Ongoing identification of residents' changing needs and preferences and improved practices • Staff practices are monitored	staff such as: • Consultation and communication with medical and health professionals about residents' care needs and preferences • Assessment when moving into the home and on an ongoing basis • Identification of residents at risk or having or developing malnutrition or dehydration due to clinical or emotional issues • Increased monitoring of resident at risk or poor nutrition due to changes in dietary intake or illness • Specific needs and issues are identified such as allergies, texture of food, effects of medications, dysphagia, chewing difficulties • Consideration of any cultural, religious and personal dietary preferences • Describe each

2.10 Nutrition and hydration	4.8 Catering Cleaning and Laundry Services	Results and process guide 2.10	Results and process guide 4.8	Module 7
drinking deficit and any special devices to be used • Information on assistance and meals the service can offer to help residents maintain their cultural and religious dietary requirements • Procedures for assessing residents' swallowing ability • Identification of the services and health professionals available to assess and review a resident's swallowing ability • Resident care plan addresses residents' swallowing ability • Menu planning includes a variety of food and fluid textures that are appropriate to residents' needs.	card) • Food prepared by appropriately trained staff, and served in a visually pleasing manner and in appropriate quantities • Access to expert advice and reference materials, as needed • Dining room promotes and encourages a social environment • Residents are encouraged to contribute ideas and feedback, and are consulted in relation to seating arrangements • Minimization of disruptive noise • Availability of appropriate staff at meal times for assistance and supervision • When residents choose to remain in their bedroom for meals, the room is prepared prior to serving the meal	evaluate and review the management of nutrition and hydration to determine its effectiveness in meeting the needs of the residents. For example: • Results are monitored • Staff practices are monitored and improved as appropriate • There is regular consultant with residents/representatives and other (eg medical, dietician and speech pathologist) about nutrition and hydration needs and preferences the strategies implement and their effect • The nutritional suitable of the diet and menu is reviewed by appropriate specialist.		resident's specific needs and preferences such as assistance required • Residents' general health such as skin integrity, body weight and fluid intake are monitored • The menu takes into account residents' preferences and it reviewed by appropriate specialists Consideration aspect three • Compliance food safety program • Management demonstrates staff and the management team have the knowledge and skills required for effective performance of their duties • There is sufficient clean, well maintained equipment for the provision of nutrition, oral and dental care, such as scales to weigh residents and denture mugs. • Provision of appropriate dining arrangements

2.10 Nutrition and hydration	4.8 Catering Cleaning and Laundry Services	Results and process guide 2.10	Results and process guide 4.8	Module 7
				• Meals are generally on time, well presented and at an appropriate temperature • Special dietary requirements are catered for such as tube, feeding, diabetic, thickened fluids, texture modified meals and nutritional supplements • Information on the menu is provided to residents and alternative meal are available

Appendix three

Standards from other countries

Standards from other countries System	Australian Standard 2.10 and 4.8	Ontario Canada Long-Term Care Standards	England Standard 16: Meals and Mealtimes	America Part 483 – Requirements for States and Long Term Care Facilities 483.35	New Zealand Nutrition Safe Food and Fluid Management
Overview			Service users receive a wholesome, appealing, balanced diet in pleasing surroundings at time convenient to them	The facility must provide each resident with a nourishing, palatable, well-balanced diet that needs the daily nutritional and special dietary needs of each resident	3.13 A consumers individual food, fluid and nutrition needs are meet as part of the service deliver
Policy and procedures		68 (2a) the development and implementation in consultation with a registered dietitian who is a member of the staff of the home, of policies and procedures relating to nutrition care and dietary services and hydration.			
Menu planning (control)	4.8 (a) for catering and menu planning to ensure that quality and variety of food is maintained and is regularly reviewed 2.10 Menu planning includes a variety of food and fluid	71 (1a) menu cycle is a minimum of 21 days in duration 71 (1b) includes menus for regular, therapeutic and texture modified diets for both meals and snacks	16.5 Special therapeutic diets/feeds are provided when advised by health care and dietetic staff, including adequate provision of calcium and vitamin D	(c) Menus must- 1 Meet the nutritional needs of residents in accordance with the recommended dietary allowances of the Food and Nutrition Board of the National Research Council,	

Standards from other countries System	Australian Standard 2.10 and 4.8	Ontario Canada Long-Term Care Standards	England Standard 16: Meals and Mealtimes	America Part 483 – Requirements for States and Long Term Care Facilities 483.35	New Zealand Nutrition Safe Food and Fluid Management
	textures that are appropriate to resident needs 4.8 Menu rotation to ensure variety in accordance with relevant guidelines 4.8 Menu updated regularly 4.8 for catering and menu planning to ensure that quality and variety of food is maintained and is regularly reviewed 4.8 Main meals served at appropriate times 4.8 Refreshments and snacks available	71 (1c) includes alternative choices of entrees, vegetables and desserts at lunch and dinner 71 (1d) includes alternative beverage choices at meals and snacks 71 (1e) is approved by a registered dietitian who is a member of the staff of the home 71 (1g) is reviewed and updated at least annually 71 (2a) provides for adequate nutrients, fibre and energy for the resident based on the current Dietary Reference Intakes (DRI's) 71 (2b) provides for a variety of food, including fresh seasonal foods, each day from all food groups in keeping	16.6 Religious or cultural dietary needs are catering for as agreed at admission and recorded in the care plan; food for special occasions is available 16.7 The registered person ensures that there is a changing menu offering a choice of meal in written or other formats to suite the capacities of all service users. This is given, read or explained to service users.	National Academy of Sciences 1 Be prepared n advance; and 2 Be followed	

Standards from other countries System	Australian Standard 2.10 and 4.8	Ontario Canada Long-Term Care Standards	England Standard 16: Meals and Mealtimes	America Part 483 – Requirements for States and Long Term Care Facilities 483.35	New Zealand Nutrition Safe Food and Fluid Management
		with Canada' Food Guide as it exists from time to time 71 (3a) resident is offered a minimum of three meals per day 71 (3b) a between-meal beverage in the morning and afternoon and a beverage in the evening after dinner 71 (3c) a snack in the afternoon and evening 71 (4) the planned menu items are offered and available at each meal and snack 71 (5) ensure that an individualized menu is developed for each resident whose needs cannot be met through the home menu cycle			
Staffing (input)	2.10 (d) that residents are assessed for and are proved with	73 1 (9) Providing resident with any eating aids, assistive	16.9 Staff are ready to offer assistance in eating where	(b) Sufficient staff. The facility must employ sufficient	

Standards from other countries System	Australian Standard 2.10 and 4.8	Ontario Canada Long-Term Care Standards	England Standard 16: Meals and Mealtimes	America Part 483 – Requirements for States and Long Term Care Facilities 483.35	New Zealand Nutrition Safe Food and Fluid Management
	assistive devices that enhance the residents ability to meet their nutrition and hydration needs (f) that residents swallowing is regularly assessed, documented and reviewed, and that food and fluids of appropriate texture are provided 4.8 Considerations Availability of appropriate staff at meal times for assistance and supervision	devices, personal assistance and encouragement required to safely eat and drink as comfortable and independently as possible 73 1 (10) Proper techniques to assist residents with eating, including safe positioning of residents who require assistance. 72 2 (a) no person simultaneously assists more than two residents who need total assistance with eating or drinking 72 2 (b) no resident who requires assistance with eating or drinking is served a meal until someone is available to provide the assistance required by the resident.	necessary, discreetly, sensitively and individually; independent eating is encouraged for as long as possible	support personnel competent to carry out the functions of the dietary service h) Paid feeding assistants 1 State-approved training course. A facility may use a paid feeding assistance The feeding assistant has successfully completed a State-approved training course that meets the requirements of 483.160 The use of feeding assistants is consistent with State law Supervision of a feeding assistant must work under a registered nurse (RN) or licensed practical nurse (LPN) In an emergency, a feeding assistant must	

Standards from other countries System	Australian Standard 2.10 and 4.8	Ontario Canada Long-Term Care Standards	England Standard 16: Meals and Mealtimes	America Part 483 – Requirements for States and Long Term Care Facilities 483.35	New Zealand Nutrition Safe Food and Fluid Management
				call a supervisory nurse for help on the resident all system Resident selection criteria – A facility must ensure that a feeding assistant feeds only residents who have no complicated feeding problems.	
Dietitians input	That expert dietary advice is sought when necessary	74 (2) registered dietitian who is a member of staff of the home is on site at the home for a minimum of 30 minutes per resident per month 74 (2) registered dietitian for the home is also a nutrition manager for the home any time spent working in the capacity of nutrition manager does not count toward clinical management 75 (1) that there is at least one nutrition	16.1 The registered person ensures that service users receive a varied, appealing, wholesome and nutritious diet which is suited to individual assessed and recorded requirements, in a congenial setting and at a flexible times	(a)The facility must employ a qualified dietitian either full-time, part-time, or on a consultant basis (1) If a qualified dietitian is not employed full-time the facility must designate a person to serve as the director of food service who receives frequently schedules consultation from a qualified dietitian (2) A qualified dietitian is one who is qualified based upon	

Standards from other countries System	Australian Standard 2.10 and 4.8	Ontario Canada Long-Term Care Standards	England Standard 16: Meals and Mealtimes	America Part 483 – Requirements for States and Long Term Care Facilities 483.35	New Zealand Nutrition Safe Food and Fluid Management
		manager for the home (2 year diploma course)		either registration by the Commission on Dietetic Registration of the American Dietetic Association, or on the basis of education, training, or experience in identification of dietary needs, planning, and implementation of dietary programs	
Production and meal delivery system (transformation)	Food prepared by appropriately trained staff, and served in a visually pleasing manner and in appropriate quantities Main meals served on time Identification of the assistive devices that are available for resident to use.	72 (2c) standardized recipes and production sheets for all menus (2d) preparation of all menu items according to the planned menu (2e) menu substitutions that are comparable to the planned menu (2f) documentation on the production sheets of any menu substitutions	16.4 Food, including liquefied meals, is presented in a manner that is attractive and appealing in terms of texture, flavour, and appearance, in order to maintain appetite and nutrition	(d) Food. Each resident receives and the facility provides – 1 Food prepared by methods that conserve nutritive value, flavour and appearance 2 Food that is palatable, attractive, and at the proper temperature 3 Food prepared in a form designed to meet individual needs 4 Substitutes	3.13.1 Food, fluids and nutritional needs of consumers are provided in line with nutritional guidelines appropriate to the consumer groups 3.13.5 All aspect of food presentation, production, storage and delivery and disposed compile with legislations and guidelines

Standards from other countries System	Australian Standard 2.10 and 4.8	Ontario Canada Long-Term Care Standards	England Standard 16: Meals and Mealtimes	America Part 483 – Requirements for States and Long Term Care Facilities 483.35	New Zealand Nutrition Safe Food and Fluid Management
				offered of similar nutritive value to residents who refuse food served (e) Therapeutic diets. Therapeutic diets must be prescribed by the attending physician	
Dining room (transformation)	2.10 (c) That residents receive sufficient food and fluids to meet their nutritional requirements Regular communication and consultation between residents and catering staff on menu planning, food presentation and individual preferences, including where the resident prefers to eat When a resident chooses to remain in their bedroom for meals, the room is	73 (1) communication of the seven-day and daily menus to residents (2) review of meals and snack times by the Resident council (3) Meal service in a congregate dining setting unless a resident's assessed needs indicate otherwise (4) Monitoring of all residents during meals 73 1 (7) Sufficient time for every resident to eat at his or her own pace 73 1 (8) Course by	16.2 Each service users is offered three full meals each day (at least tow of which must be cooked) at interval of not more than five hours during the day 16.3 The interval between the evening meal and breakfast should not normally be more than 14 hours. Hot and cold drinks and snacks should be available at all times 16.8 The registered	(f) Frequency of meals 1 Each resident receives and the facility provides at least three meals daily, at regular times comparable to normal mealtimes in the community 2 There must be no more than 14 hours between a substantial evening meal and breakfast the following, day except as provide in (4) below 3 the facility must offer snacks at bedtime daily	4.5.1 Adequate access is provide to lounge, playrooms, visitor, dining facility to meet the needs of consumers 3.13.2 Consumers who have addition or modified nutrition requirements or special diet have these needs meet 3.13.3 The person food preference of the consumer are met where appropriate 3.13.4 Special equipment is available as required

Standards from other countries System	Australian Standard 2.10 and 4.8	Ontario Canada Long-Term Care Standards	England Standard 16: Meals and Mealtimes	America Part 483 – Requirements for States and Long Term Care Facilities 483.35	New Zealand Nutrition Safe Food and Fluid Management
	prepared prior to serving the meal.	course service of meals for each resident	person ensures that mealtimes re unhurried with services users being given sufficient time to eat	4 When a nourishing snack is provided at bedtime, up to 16 hours may elapse between a substantial evening meal and breakfast the following day if a resident group agrees to this meal span, and a nourishing snack is served (g) Assistive devices. The facility must provide special eating equipment and utensils for residents who need them	
Information system (memory)	2.10 (a) that residents nutrition and hydration needs are assessed, documented, regularly reviewed and acted upon 2.10 Availability of	68 (2b) the identification of any risks related to nutrition care and dietary services and hydration 68 (2c) the implementation of			

Standards from other countries System	Australian Standard 2.10 and 4.8	Ontario Canada Long-Term Care Standards	England Standard 16: Meals and Mealtimes	America Part 483 – Requirements for States and Long Term Care Facilities 483.35	New Zealand Nutrition Safe Food and Fluid Management
	dietary information for the development and review of menus to ensure residents needs are met c) (d) Assessment and action on an individual resident's preferences 4.8Resident information includes meal times 4.8 A system for monitoring, documenting and reviewing each resident's dietary preferences	interventions to mitigate and manage those risks 68 (2d) a system to monitor and evaluate the food and fluids intake of residents with identified risks related to nutrition and hydration 68 (2e) weight monitoring system to measure and record with respect to each resident			
Feedback for menu planning (feedback)	(b) residents participate in menu planning and food presentation				

Appendix four
National Menu Planning Survey

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Menu Survey

Residential Aged Care

Please complete the following survey as part of research into menu design in residential aged care

All of your responses will be kept private and confidential

SECTION 1: Facility Information

The following questions are to gather information on your facility to help determine the structure and composition of the foodservice. Please indicate your results with a mark or a tick.

NAME OF FACILITY .....

LOCATION		
☐ NSW (1) ☐ QLD (2) ☐ VIC (3) ☐ SA (4)	☐ WA (5) ☐ NT (6) ☐ TAS (7) ☐ ACT (8)	☐ Rural (1) ☐ Metropolitan (2)

TYPE OF FACILITY
☐ Government (1) ☐ Not for profit (2) ☐ For profit (3)

Please list the number of beds in each category and the number of residents

CLASSIFICATION OF RESIDENTS			
	High dependency	**Low dependency**	**Dementia specific unit**
Number of beds			
Number of residents			
Number of residents receiving "extra services"			

FOODSERVICE PRODUCTION SYSTEM	
☐ In-house (1) ☐ Outsourced (2)	☐ Cook chill (1) ☐ Cook fresh (2) ☐ Cook freeze (3) ☐ Other (please describe) ....
If outsourced:	Name of company supplying your products..... ....

FOODSERVICE DELIVERY SYSTEM

- ☐ Tray meals (1)
- ☐ Bulk food plated in kitchens (2)
- ☐ Bulk food plated in dining areas (3)
- ☐ Mixture of some/all, please specify.....

.....

FOODSERVICE MANAGER

What is the profession of the person who manages the foodservice/catering at your facility?

- ☐ Assistant Director of Nursing (1)
- ☐ Catering manager (2)
- ☐ Chef (3)
- ☐ Dietitians (4)
- ☐ Directory of Nursing/Care (5)
- ☐ Food service manager (6)
- ☐ Food Supervisor (7)
- ☐ Head cook (8)
- ☐ Hotel Service Manager (9)
- ☐ Resident Support Service Manager (10)
- ☐ Other, please specify

.....

DIETITIAN	
Does the facility have a credentialed Accredited Practising Dietitian supporting foodservices?	☐ YES (1) ☐ NO (2)
If yes, what is their status of employment at your facility and please provide details?	☐ Part time (1) ☐ Full time (2) ☐ Visit as required (3)

If they are part time, how often do they visit the facility?.....

If they visit as required, how often does this occur?

.....

How is Accredited Practising Dietitian status verified?

.....

SECTION 2: Menu information

MENU CYCLE

What is the length of your menu cycle?

- ☐ 1 week (1)
- ☐ 2 weeks (2)
- ☐ 3 weeks (3)
- ☐ 4 weeks (4)
- ☐ 5 weeks (5)
- ☐ 6 weeks (6)
- ☐ 7 weeks (7)
- ☐ 8 weeks (8)
- ☐ More than 8 weeks, please specify:

How many menus do you offer?

- ☐ All year round (1)
- ☐ Winter (2)
- ☐ Summer (3)
- ☐ Spring (4)
- ☐ Autumn (5)

Please indicate which of the following you have on your menu

Breakfast	Lunch	Evening meal
☐ Porridge (1)	☐ Meat (1)	☐ Soup (1)
☐ Cold cereals (2)	☐ White vegetables (2)	☐ Hot meat (2)
☐ Toast (3)	☐ Green vegetables (3)	☐ Vegetables (3)
☐ Fruit toast (4)	☐ Orange vegetables (4)	☐ Entrée finger foods (4)
☐ Juice (5)	☐ Alternative meat (5)	☐ Sandwiches (5)
☐ Eggs (6)	☐ Salad (6)	☐ Salad (6)
☐ Bacon (7)	☐ Sandwiches (7)	☐ Dessert (7)
☐ Tomatoes (8)	☐ Dessert (8)	☐ Bread (8)
☐ Pancakes (9)	☐ Soup (9)	☐ Fresh fruit (9)
☐ Crumpets (10)	☐ Fresh fruit (10)	☐ Tinned fruit (10)
☐ Muffins (11)	☐ Tinned fruit (11)	☐ Yogurt (11)
☐ Yogurt (12)	☐ Bread/rolls (12)	
Any other items please list	*Any other items please list*	*Any other items please list*

Which of these foods and fluids are offered at mid meals?

Morning Tea Foods	Afternoon Tea Foods	Supper Foods
☐ Scones (1)	☐ Scones (1)	☐ Scones (1)
☐ Pikelets (2)	☐ Pikelets (2)	☐ Pikelets (2)
☐ Cake (3)	☐ Cake (3)	☐ Cake (3)
☐ Fruit (4)	☐ Fruit (4)	☐ Fruit (4)
☐ Yogurt (5)	☐ Yogurt (5)	☐ Yogurt (5)
☐ Biscuits	☐ Biscuits (6)	☐ Biscuits (6)
☐ Sandwiches	☐ Sandwiches (7)	☐ Sandwiches (7)
☐ Fruit bun	☐ Fruit bun (8)	Fruit bun

Other, please specify	Other, please specify ...	Other, please specify ....
Do you provide any puree or vitamised mid meal snack please specify	**Do you provide any puree or vitamised mid meal snack please specify**	**Do you provide any puree or vitamised mid meal snack please specify**
FLUIDS		
☐ Tea (1) ☐ Coffee (2) ☐ Milk (3) ☐ Milo (4) ☐ Flavoured milk (5) ☐ Cordial (6) ☐ Juice (7) ☐ Water (8) ☐ Soft drink (9) ☐ Soda water (10)	☐ Tea (1) ☐ Coffee (2) ☐ Milk (3) ☐ Milo (4) ☐ Flavoured milk (5) ☐ Cordial (6) ☐ Juice (7) ☐ Water (8) ☐ Soft drink (9) ☐ Soda water (10)	☐ Tea (1) ☐ Coffee (2) ☐ Milk (3) ☐ Milo (4) ☐ Flavoured milk (5) ☐ Cordial (6) ☐ Juice (7) ☐ Water (8) ☐ Soft drink (9) Soda water (10)
Other, please specify	Other, please specify.....	Other, please specify .....

SPECIAL DIETS & SPECIAL MENU PREPARATION		
Number of residents on a special diet	.....	
Which special diets does your menu cater for? Please indicate how many residents are on each of these diets at your facility.	**Special diet** ☐ Diabetes (1) ☐ Weight reduction (2) ☐ Cardiovascular disease (3) ☐ Chopped (4) ☐ Pureed/vitamised (5)	**Number of residents**
	Other/s, please specify + number of residents:	
Please list the types of special cooking or recipes that your facility uses when preparing meals	....	

ADDITIONAL FOODS & SUPPLEMENTS	
Do you provide any additional foods and/or supplements to support the nutritional needs of residents?	☐ YES (1) ☐ NO (2)

Please indicate the reasons for providing additional foods and/or supplements	☐ Reduced body weight (1) ☐ Reduced appetite (2) ☐ Reduced food intake (3) ☐ Body Mass Index (BMI) lower than 22kg/m^2 (4) ☐ Palliative care (5) ☐ Returned from hospital with weight loss (6) ☐ Other, please specify: (7).....

ADDITIONAL FOODS & SUPPLEMENTS cont.	
Please list the foods or supplements which are offered in addition to the menu to support residents nutritionally.	
Foods	**Supplements (purchased from a company)**
☐ Extra bread (1) ☐ Yoghurt (2) ☐ Ice cream (3) ☐ Custard (4) ☐ Flavoured milk (5) ☐ Cream (6) ☐ Jelly (7) ☐ Biscuits (8) ☐ Cheese (6)	☐ Liquid supplement (tetra packs/cans) (1) Please specify type: .... ☐ High protein drinks made from powders (2) Please specify type/brand: ..... ☐ Puddings (3) Please specify type/brand: .....
Others not listed above, please specify:	*Others not listed above, please specify:* ....

FOOD FORTIFICATION	
Does your facility fortify foods in any way (food fortification is adding nutritional powders, creams or other ingredients to foods to increase their nutritional value)?	☐ YES (1) ☐ NO (2)
If yes, please indicate:	
Type of food fortification strategy	**When is this added? (frequency during the day)**
☐ Protein powders (e.g. Sustagen, (1)Ensure, Proform, other.....) *(please circle)*	
☐ Cream (2)	
☐ Milk powder (3)	
☐ Margarine (4)	
☐ Butter (5)	
☐ Other, please specify.....	

SELECTING MENU ITEMS

What guides you in selecting items for your menu?

- ☐ Policy (1)
- ☐ Menu assessment by a dietitian (2)
- ☐ Type of residents e.g. dementia (3)
- ☐ Menu surveys from resident (4)
- ☐ Menu planning meetings with residents (5)
- ☐ Menu planning training/workshop (6)

Other, please specify:.....

Does your facility use salt when cooking?	☐ YES (1) ☐ NO (2) Please specify: ....
Are any other items used to flavour meals? (e.g. herbs, spices, sauces, etc.)	☐ YES (1) ☐ NO (2) Please specify:..... .....

STANDARD PORTION SIZES

The tables below collect information on ***standard portion sizes*** used at your facility.
If you do not used standard portion sizes could you please complete the table outlining quantities.

Portion sizes/serving size	**Grams or mLs (per serve)**
Porridge	
Cereal (dry)	
Tinned fruit	
Juice	
Meat serve (beef, chicken)	
Wet meat dish (stew, curry)	
Mashed potato	
Mashed potato	
Orange vegetable	
Green vegetable	
Dessert	
Custard	
Soup	
Finger foods	
Vitamised/pureed	
Porridge	
Cereal (dry)	
Tinned fruit	
Juice	

Meat serve (beef, chicken)	
Wet meat dish (stew, curry)	
Mashed potato	
Mashed potato	
Orange vegetable	
Green vegetable	
Dessert	
Custard	
Soup	
Finger foods	
Other (add additional foods not accounted for above	

STANDARD PORTION SIZES cont.

If you do not use standard portion sizes, please complete this table for each type of food on your menu. Examples are provided for roasting meats and potato.

	Quantity	**Number served from recipes**
Eg Roast meats	*40kg*	*120*
Eg Potato	*1kg*	*10*
Porridge		
Cereal (dry)		
Tinned fruit		
Juice		
Meat serve (beef, chicken)		
Wet meat dish (stew, curry)		
Mashed potato		
Mashed potato		
Orange vegetable		
Green vegetable		
Dessert		
Custard		
Soup		
Finger foods		
Vitamised/pureed		
Porridge		
Cereal (dry)		
Tinned fruit		
Juice		
Meat serve (beef, chicken)		
Wet meat dish (stew, curry)		

Mashed potato		
Mashed potato		
Orange vegetable		
Green vegetable		
Dessert		
Custard		
Soup		
Finger foods		
Other (add additional foods not accounted for above		

MENU ORGANISATION

Does your catering operation use standardised recipes?

- ☐ YES (1)
- ☐ NO (2)

If not, what do you use? Please specify:

Do you use recipes with a pre-calculated nutrient content?

- ☐ YES (1)
- ☐ NO (2)

If so, please specify:

How do you obtain feedback from residents about the menu?

Do you use any other types of feedback about the menu (e.g. staff?)
Please list any barriers you perceive that influence the planning of the menu
What guides you to select items for your menu?

MENU CHOICE

Are residents offered a choice of meals? Please specify the number of choices they have at each meal and any further details as required:

Was not used

Breakfast.....
Morning tea.....
Lunch.....
Afternoon tea.....
Dinner.....
Supper.....

When do residents choose their meals or menu items?

- ☐ Immediately prior to consumption (1)

- ☐ 24 hours prior to consumption (3)
- ☐ 2 days prior to consumption (4)
- ☐ 3 days prior to consumption (5)
- ☐ >3 days prior to consumption (6)
- ☐ Only upon coming to live at the facility (food preference data) (7)

Extra services Not used	
Do you provide any additional foods, beverages or service to residents paying "extra services"?	Yes No
Please list the differences in the menu for residents receiving "extra services" "Please provide a copy of your facility's menu"	....

SECTION 3: Staffing information

Number of staff in food services

1. Staff involved in food production (full time equivalents):.....
2. Staff involved in food delivery (full time equivalents):.....

Per resident per day meal cost (food and labour) $.....

As part of the information collected, it would be very helpful to have a copy of the following:

- ☐ Your current menu
- ☐ Menu policy
- ☐ Policy for choice
- ☐ Policy for special meals

This information is current up to and including (insert date survey completed):
.....

Your support and help has been very much appreciated. All details of the above information and documents will be kept completely private and confidential and stored in locked filing cabinets at the University of Queensland. ***Thank you for your time.***

Ways of getting survey back
Reply paid envelop
Fax (07) 3365 6877 and don't forget to send your menu when you fax.

Please complete survey by 1st April 2010

Many thanks
Karen Abbey
(02) 6598 5055 or 0417 608 206

Ethics approval number HMS09/0212

Appendix five
Results to determine food components

Breakfast	%	Lunch	%	Evening meal	%
Porridge	100%	Meat	100%	Meat	25%
Cold cereal	100%	Meat alternative	90%	Meat alternative	0%
Semolina	0%	White veg	100%	Soup	100%
French toast	5%	Green Veg	100%	White veg	10%
Crumpets	25%	Orange Veg	100%	Green Veg	0%
Toast	100%	Salad	60%	Orange veg	0%
Fruit toast	50%	Sandwiches	50%	General Vegetables	60%
Juice	100%	Dessert	100%	Entrée/finger foods	90%
Eggs	100%	Soup	10%	Sandwiches	100%
Yogurt	40%	Fresh fruit	75%	Salad	90%
Bacon	90%	Tinned fruit	70%	Dessert	75%
Tomatoes	90%	Bread/roll	100%	Bread	65%
Pancakes	30%	Yogurt	0%	Fresh fruit	60%
Muffins	40%	Finger foods	0%	Tinned fruit	60%
Bake beans	10%			Yogurt	50%
Spaghetti	10%				
Cream corn	0%				
Mushrooms	0%				
Sausages	0%				

Morning/afternoon tea/ supper	%	Fluids	
Scones	75%	Tea	100%
Pikelets	65%	Coffee	100%
Cake	85%	Hot chocolate	5%
Fruit	60%	Milo	85%
Yogurt	45%	Milk	90%
Biscuit	95%	Flavoured milk	65%
Sandwiches	75%	Cordial	100%
Fruit bun	65%	Soft drink	45%
Hot foods	0%	Soda water	40%
Milk shakes	0%	Mineral water	0%
Cheese	0%	Juice	90%
Dips	0%	Herbal tea	0%
		Milk shake	0%

Appendix six
Ethics approval for the National Menu Survey

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

School of Human Movement Studies
HEAD OF SCHOOL
Professor Doune Macdonald

The University of Queensland
Brisbane Qld 4072 Australia
Telephone (07) 3365 6241
International +61 7 3365 6241
Facsimile (07) 3365 6877
Email secretary@hms.uq.edu.au
Internet www.hms.uq.edu.au
CRICOS PROVIDER NUMBER 00025B

December 2, 2009

Karen Abbey,
School of Human Movement Studies,
The University of Queensland,
4072.

Dear Karen,

Re: ethical review of the following project:
Better practice in food and nutrition services: Menu planning and menu design to deliver optimal nutrition to residential aged care

Thank you for the opportunity to review your proposal. I am pleased to let you know that the project has been cleared in accordance with the ethical review guidelines at The University of Queensland. Your approval number is: HMS09/0212.

Please note that:

(i) Amendments to any part of the approved protocol (however minor) should be submitted to me for consideration.
(ii) Signed statements of informed consent should be kept secure in case we need to access them in the future.

I wish you well with your research.

Yours sincerely,

Dennis Taaffe
School of Human Movement Studies Ethics Committee

Appendix seven

Information sheet for the National Menu Survey

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

INFORMATION SHEET
Better practice in food and nutrition services:
Menu planning and menu design to deliver optimal nutrition to residential aged care

Residential Aged Care Menu Survey

INVESTIGATORS
Ms Karen Abbey, PhD Scholar, Nutrition & Dietetics, School of Human Movement Studies, Ph. (02) 6598 5055 0437 307 513.
Dr Olivia Wright, Nutrition & Dietetics, School of Human Movement Studies, Ph. 3346 7768
Professor Sandra Capra, Nutrition & Dietetics, School of Human Movement Studies, Ph. 3346 7703

Background
The purpose of this study is to make a significant contribution to foodservice management processes, menu functionality and foodservice delivery practices in residential aged care facilities. We are investigating factors influencing menu design in residential aged care throughout Australia. The overall goal of the study is to:

Obtain a comprehensive dataset of menu design and foodservice delivery system information from residential aged care facilities throughout Australia, including:

- factors driving menu design;
- extent of consultation of resident preferences;
- types of food items provided;
- types of supplements and or fortified foods provided and frequency, and
- factors influencing the foodservice delivery system.

We are interested in gaining further insight about how menu and delivery systems are planned and how they operate at different facilities throughout Australia.

What is involved
If you agree to take part in this study, we ask that you complete the menu survey attached and return it to us by post using the reply paid envelope included. If you do not want to take part, that is okay – it is up to you! Choosing not to participate will not have any negative implications.

Will information be kept private?
Yes. We will remove all names from all of the information and assign your facility a code. Only the research team will be able to see this information. Staff or facility names will not be used when we write about the research.

What will happen with the findings?
We will provide you with a summary of the results by post. The results will also be presented (in de-identified form) at conferences and published in scientific journals.

What's in it for me?
The results of this study will not be of direct benefit to you, but they will inform menu design strategies to benefit aged care residents in the future.

Are there any risks if I agree to take part?
There are no risks to you or your facility in taking part in the study. All results will remain strictly confidential. No facilities will be identified in any of the research or resulting publications.

Can you change your mind about being part of the research?
Yes. You can choose to cease your participation in the research at any time. We will respect your decision, and destroy any notes and information obtained from you.

This study has been cleared in accordance with the ethical review guidelines and processes of the University of Queensland. These guidelines are endorsed by the University's principal human ethics committee, the Human Experimentation Ethical Review Committee, and registered with the Australian Health Ethics Committee as complying with the National Statement. You are free to discuss your participation in this study with project staff contactable on (02) 6598 5055. If you would like to speak to an officer of the University not involved in the study, you may contact the School Ethics Officer on 33467904."

Thank you for your time

Karen Abbey
PhD Scholar, Nutrition & Dietetics
School of Human Movement Studies
University of Queensland

Appendix eight
Foodservices and Meal Environment Quality Tool

SECTION 1: Facility Information

DATE .....

NAME OF FACILITY .....

State	Metropolitan/rural location	Type of facility
☐ NSW (1) ☐ QLD (2) ☐ VIC (3) ☐ SA (1)	☐ Rural (1) ☐ Metropolitan (2)	☐ Government (1) ☐ Not for profit (2) ☐ For profit (3)

SECTION TWO : FOODSERVICE INFORMATION

FOODSERVICE PRODUCTION SYSTEM	
☐ In-house (1) ☐ Outsourced (2)	☐ Cook chill (1) ☐ Cook fresh (2) ☐ Cook freeze (3) ☐ Other (please describe)

FOODSERVICE DELIVERY SYSTEM	
☐ Tray meals (1) ☐ Bulk food plated in kitchens (2) ☐ Bulk food plated in dining areas (3) ☐ Mixture of some/all, please specify.....	**Thermal support system Y/N (1,2)** ☐ Baine Marie (1) ☐ Hot box (2) ☐ Heating box (3) ☐ Plate warmer (4)
MENU CYCLE Length ..... 4 weeks (1) five weeks (2) six weeks (3) Eight (4)	
Is there any evidence of allied health involvement in supporting foodservices	☐ Dietitians (1) ☐ Speech pathologist (2)
Menu choice ☐ Upon admission (1) ☐ 2 week prior to meal (2) ☐ 1 week prior to meal (3) ☐ 3 days before meal (4) ☐ 2 days before meal (5) ☐ 1 day before (6) ☐ On the day (7) ☐ Other _____	**Comments**

Food preferences management- what system does the facility use to track	Nurses station	Kitchenette	Kitchen
	☐ Card (1) ☐ Folder (2)	☐ Card (1) ☐ Folder (2)	☐ Card (1) ☐ Folder (2)

meal and dietary requirements	☐ Clip board (paper) (3) ☐ White board (4) ☐ Chart (5) ☐ Information on fridge (6) Computer software (7) ☐ Other _____	☐ Clip board (paper) (3) ☐ White board (4) ☐ Chart (5) ☐ Information on fridge (6) Computer software (7) ☐ Other _____	☐ Clip board (paper) (3) ☐ White board (4) ☐ Chart (5) ☐ Information on fridge (6) Computer software (7) ☐ Other _____
The method by which a food preference is changed **Time taken to activate preferences changes for a resident**	☐ Form (1) ☐ Verbally to staff (2) ☐ Going through menu (3) Care staff (1) Foodservice staff (2) Admin staff (3) ☐ Same day (1) ☐ 24 hours (2) ☐ 48 hours (3) Other _____	**How is food preference/menu data managed for production and are there any issues?** **Comments:**	☐ Specific computer package (1) ☐ Excel (2) ☐ Manual count system on paper (3) Other _____ Time it takes to undertake (min) process:
Eating implements Available in the meal environment to assist with feeding	☐ Narrow feeding spoon (1) ☐ Plate guard (2) ☐ Cutlery (special) (3) ☐ Placemat (non-slip) (4) ☐ Sipper lid (5) ☐ Teaspoons (6) ☐ High sided plate (7) ☐ Colour placemat (8) ☐ Colour coded crockery (9) ☐ Personalised crockery (10)	**Meal times** Breakfast Morning Tea Lunch Afternoon Tea Evening meal	
		Flexible meal times available	Y/N (1,2)
		Any staggered meal times	Y/N (1,2)
		Staff shift change over do they co-inside with meals?	1 yes 2 no
		Nutrition specifications	Y/N Copy
		Menu	Copy
		Portion sizes	Y/N (1,2) Copy

SECTION THREE : MEAL ENVIRONMENT

Meal	Breakfast	MT	Lunch	AT	Evening meal	General comments
Number of residents in dining room/bed room						
Gender **Males** **Females**						
Number **High care** **Low care** **Dementia care**						
No of service staff						
Care						
Foodservice						
Other						
Is there a meal environment co-ordination role	Y/N (1,2)	Y/N (1,2)	Y/N (1,2)	Y/N (1,2)	Y/N (1,2)	
For yes who undertakes that role RN (1) Care staff (2) FS (3) Other						
Time meal service started						
Time meal service finished						
Is there a meal eaten check list (food & fluids)	Y/N (1,2)					
Number of fully assisted feeds						
No of meal size						
Small						
Medium						
Large						
No of Different diet types						
Normal meal						
Diabetic						
Low fat						
High fibre						
Other _____						
No Meal texture						
Normal						
Soft (A)						
Minced (B)						
Cut up						
Puree (C)						
Thickened fluids						

Normal						
L1/150/mid thick/nectar						
L2/400/mod thick/honey						
L3/900/ext thick/pudding						
Are any food fortification strategies used? Kitchen Added when meal served	Y/N (1,2) Type		Y/N (1,2) Type		Y/N (1,2) Type	
Medication given during meal time	Y/N (1,2)	Y/N (1,2)	Y/N (1,2)	Y/N (1,2)	Y/N (1,2)	
Meal presentation						
Neat – Sloppy	Neat = 1	Sloppy = 2				
Plates clean (no drips/spills)	Clean (1)	Drips (2)	Spills (3)			
Good colour combination of foods	Balanced (1)	Unbalanced (2)				
Puree meals not smothered in gravy	Smothered yes (1)	Not smothered (2)				
Puree meals effort is made to enhance presentation	Enhanced (1)	No enhancement (2)				
One course served at a time	Y/N (1,2)	-	Y/N (1,2)	-	Y/N (1,2)	
No. of choices at meal time						
Flexibility to provide other foods not on the menu	Y/N (1,2)					
Was seconds offered? **Is there capacity in FS**	Y/N (1,2) Y/N (1,2)	Y/N Y/N	Y/N Y/N	Y/N Y/N	Y/N Y/N	
Eating environment noise Reading						
Eating environment lighting Reading						
Eating environment temperature °C						
Eating environment space Cluttered						
General environment atmosphere (Rushed, Calm, Tense)	Rushed (1) Tense (2) Calm (3)					
Table settings						
Table clothes	Y/N (1,2)					
Placemats	Y/N (1,2)					

Tray cover	Y/N (1,2)					
Flowers	Y/N (1,2)					
Knives and forks	Y/N (1,2)					
Name cards	Y/N (1,2)					
Menu on table	Y/N (1,2)					
Smell of the meal	Y/N (1,2)	-	Y/N	-	Y/N	

Other general observations – coded upon the observations made

Section four: Meal environment plate wastage (Facility -)

Breakfast wastage - Nil (0) ¼ ½ ¾ All (1)

Food item	Porridge	Toast	Cereal	Fruit	Hot B'fast	Yogurt	Juice	Milk	Fluid
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Total									
Nil (0)									
¼									
½									
¾									
1 (All)									
Total									
Total serves									
Portion size served									
Total served									
Count total wasted									
Total portion wastage									

Morning tea wastage - Nil (0) ¼ ½ ¾ All (1) (Facility -)

Food item/ Observation	Food Biscuits	Food	Fluid Juice	Fluid	Fluids	Supplement
1	½		1			
2	½		½			
3	½		1			
4	½		½			
5			½			
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
Total						
Nil (0)						
¼						
½	4		3			
¾						
1 (All)			2			
Total	4		3.5			
Total serves	4		5			
Portion size served	180g		200ml			
Total served	720g		1000ml			
Count total wasted	0		1.5			
Total portion wastage	0		300ml			

Afternoon tea wastage form is the same for morning tea

Lunch meal wastage- Nil (0) ¼ ½ ¾ All (1) (Facility -)

Food item/ Observe wastage	Meal one	Meal two	Puree	Dessert	Fluids	Fluid
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
Total						
Nil (0)						
¼						
½						
¾						
1 (All)						
Total						
Total serves						
Portion size served						
Total served						
Count total wasted						
Total portion wastage						

Evening meal wastage- Nil (0) ¼ ½ ¾ All (1) (Facility -)

Food item/ Observation	Soup	Hot entrée	Sandwich	Salad	Dessert	Fruit	Fluids
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Total							
Nil (0)							
¼							
½							
¾							
1 (All)							
Total							
Total serves							
Portion size served							
Total served							
Count total wasted							
Total portion wastage							

SECTION FIVE : INFORMATION SHEET AND DEFINITIONS

Part of the tool	Information
Section one **Facility information**	
Date	Date of observations
Name of facility	Keep confidential – facility will be non-identifiable
Sate	What part of country record
Location	Metropolitan/rural location of facility
Type of facility	Government Not for profit For profit (type of facility)
Section two **Foodservice information**	
Production system	Type of production system Cook-fresh Cook-chill Cook-frozen
Meal delivery system	Served straight from kitchen, served bulk satellite kitchens, tray service
Thermal support system	How are meals keep warm before going to residents
Menu cycle length	How many weeks the menu runs for
Allied health support	Any evidence that Allied Health involvement in supporting foodservices
Menu choice	When does residents made a choice regarding menu selection
How is food preferences management	How is food preference and dietary information managed between the areas of the organisation (copy of forms used)
Method to change dietary preferences	What method can the resident undertake to change dietary (food) preferences
Time taken to change preferences	Once a resident has made a change how long does it take to activate these changes
Production and dietary changes	How does the production system manage these changes and what time frame is involved to undertake this process
Eating implements	What kinds of eating implements does foodservices have available to assist meal times
Meal times	What are the standard meal times of the facility
Flexible meal times	Is there any flexibility in the meal times of the organisation
Any staggered meal services	Does the organisation have staggered meal services (2 meal settings)
Shift turn over	Does the organisation roster staff turnover for maximum staffing at meal times
Portion control sizes	What kind of means do foodservices undertake to portion control food and are there any nutrition/foodservice specifications.
Nutrition specifications	Does the facility have any documentation surrounding this (copy is possible)
Menu	If possible obtain a copy of the menu
Section three **Meal environment**	
Number of residents in dining room/bed rooms	General count of how many residents are in these areas
Number of staff involved in meal service	Record the number of staff who are involved with the delivery of the meal service in the dining room
Meal time staff co-ordination of eating environment	Is there a person (s) who are assigned to control the flow and service within the dining room
Time meal time starts and finished	How long does each meal service run for
Meal check list	Is there some form of system in place to assure that each residents

	has received all meal components – this is especially relevant for dementia areas where the environment can be more unpredictable
Assistance to feed	This is a general number of feeding assistance per meal environment
Meal size	What variation of meal sizes does foodservice provide
Diet types	What variation of diets does foodservice cater for
Texture modification	What is the breakdown of different texture modification required for foodservice to prepare for each meal
Thickened fluids	What is the breakdown of different thickened fluids required for foodservice to prepare for each meal
Food fortification strategies	Does foodservice use any food fortification strategies – these can occur while preparing the food and be added at meal service
Medications	Is the medication trolley in the meal environment during meals
Meal presentation	How does the meal look - in particular to the puree meals
Course service	Was the meal served one course at a time or did residents have multi food items placed in front of them
No of choices	How many other choices were available if the resident did not like the meal
Second (food) offered	Does either foodservices or care staff offer seconds if food is left over
Eating environment noise	What is the noise reading of the dining environment
Eating environment lightening	What is the lightening rating
Eating environment temperature	What is the room temperature during meal service
Eating environment space	Is there enough room to move around – move with wheel chairs
General atmosphere	How did the atmosphere feel – rush, tense, calm
Table settings	Did tables have clothes, placemats, tray covers or trays set correctly to go to residents, flower arrangements, name on table or menu on table.
Smell of food	Did the meal environment smell of food
Section four **Meal environment plate wastage**	Observational plate wastage of what has been left on the plate, bowl, glass etc. This is carried out away from residents at either the kitchen or on trolleys which will have a scrap bucket. Plate wastage will be undertaken by using the following observations Nil (0) ¼ ½ ¾ All (0). Nil is that there is nothing left on the plate and All is that no food has been eaten.

Additional coding from additional observations made

Observations	coding
Portion size	
Was it carried out	Y/N (1,2)
Different meal sizes offered to residents	Y/N (1,2)
Portion size equipment used to serve meals	Y/N (1,2)
Dietary information	
Did foodservice face difficulties in getting information	Y/N (1,2)
Dining room co-ordination	Y/N (1,2)
Poor feeding practices	Y/N (1,2)
Observed staff feeding more than one resident	Y/N (1,2)
Feeding of resident interrupted by other staff	
Food sat in front of resident waiting for assistance	Y/N (1,2)
Observations that residents took longer than 30minutes to eat their meal	Y/N (1,2)
Documentation to indicate which residents require feeding assistance	Y/N (1,2)

Observed that feeding assistance was provided to all residents who require it	Y/N (1,2)
Inconsistent feeding assistance observed meal services over the day	Y/N (1,2)
Feeding assistance	
Staff seated to feed	Y/N (1,2)
Staff ask before plate is taken away	Y/N (1,2)
Observed that resident view meal before it is cut up	Y/N (1,2)
Vitamised/puree meals are not mixed together	Y/N (1,2)
Resident served one course at a time	Y/N (1,2)
Residents asked before clothes protector goes on	Y/N (1,2)
Menu in the meal environment	
Menu on display	Y/N (1,2)
Menu board	Y/N (1,2)
Menu board for vitamised/puree	Y/N (1,2)
Menu changes are residents are informed	Y/N (1,2)
Was alternative choices available on the menu	
Was alternative choice for vitamised	
Mid meal snacks	Y/N (1,2)
Menu mistake	
Menu differed from what was served	Y/N (1,2)
Were resident informed of change	Y/N (1,2)
Serving error during meal service	Y/N (1,2)
Did staff use the resident meal information system to check	Y/N (1,2)
Serving error was noted what the capacity for the meal to be fixed	Y/N (1,2)
Was the serving error corrected	Y/N (1,2)
Menu deviation	
Menu deviation from lunch meal, dessert, evening meal, soup	Y/N (1,2)
Morning tea was the same as afternoon tea	Y/N (1,2)
Disruptive noise	
Dishwasher was used	Y/N (1,2)
Plates scraped away from dining area	Y/N (1,2)
Trolley taken around to collect while meal service still in operation	Y/N (1,2)
Trolley discreetly in dining room	Y/N (1,2)
TV on during meal service	Y/N (1,2)
Meal environment aroma and space	
Aroma for food in dining rooms	Y/N (1,2)
Dining room recognisable space	Y/N (1,2)
Dining room appearance	Y/N (1,2)
Dining room cluttered	Y/N (1,2)
Dining room neat	Y/N (1,2)
Music is playing	Y/N (1,2)
Trays and table setting	
Tray mats used	Y/N (1,2)
Tray arrange dislike a table	Y/N (1,2)
Residents receive trays were set up prior to meal	Y/N (1,2)
Observed resident were asked to the dining room or staying room for three meals	Y/N (1,2)

Appendix nine
Information sheet for the FAMET tool

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

FACILITY INFORMATION SHEET
Better practice in food and nutrition services:
Menu planning and menu design to deliver optimal nutrition to residential aged care

Foodservice and Meal Environment Quality Tool

INVESTIGATORS
Ms Karen Abbey, PhD Scholar, Nutrition & Dietetics, School of Human Movement Studies, Ph. 0417 608 206
Dr Olivia Wright, Nutrition & Dietetics, School of Human Movement Studies, Ph. 3346 7768
Professor Sandra Capra, Nutrition & Dietetics, School of Human Movement Studies, Ph. 3346 7703

ETHICS APPROVAL NUMBER

Background
The purpose of this study is to make a significant contribution to understanding how meal environment, menu planning and foodservices operate in residential aged care facilities. Both the menu and meal environment play a crucial part in providing nutritional care to residents. We are investigating factors influencing how the meal environments interact with foodservices. The overall goal of the study is to:

Obtain a comprehensive dataset of how the meal environment interacts with foodservices and use observational plate wastage as a measure of the menu success within the meal environment.
The following key areas are being investigated:

- Observe general foodservice characteristics
- Observe how facilities manage the information flow between food production, meal delivery and the meal environment
- Observe how the meal environment interfaces with the menu and what impacts dining has on the success of the menu
- Observe staff and how they respond in the meal environment, examining factors such as meal service duration, types and variations of diet and texture modifications, meal co-ordination and flexibility of the menu to provide food options.
- Observe how foodservices plates and present the meal
- Observe physical characteristics such as lightening, sound, space and temperature of the meal environment
- Undertake observational plate wastage

Study Process
The study will undertake a quality improvement activity in your facility. The audit tool has been designed to investigate current foodservice and meal environment systems which are in place in your facility (see attached tool). The tool requires no interaction with the residents (apart from normal acknowledgments – good afternoon) and a meal environment will be viewed from its commencement (Breakfast) until completion (evening meal) including mid-meal snack.

The Foodservice and Meal Environment Quality Tool
The quality tool is divided into four sections as outlined below.

Section one : **Facility information** - location and type of facility

Section two : **Foodservice information** – Collects information relating to the foodservices systems menu preference information system, and information regarding meal times, menu and portion control.

Section three: **Meal environment** – collects information relating to numbers of residents in dining room, breakdown of resident type, number of service staff, how long the meal service goes for,

summary of the types of meal and textures required, meal presentation, service of the meal, dining room environmental factors such as lighting, space, temperate, space and table settings.

Section four : **Observational plate wastage** - examining how much food is not consumed. This is done away from the residents view –usually in the kitchen or on a trolley. The meal plates are collected by care/foodservice staff and before food scrapes are disposed of an observation of wastage will be taken. The form is designed not to identify individual residents as the purpose of the tool is to collect total wastage over the entire meal.

The nutrition researcher will be in a meal environment (dining room) for one day, making observations and recording plate wastage at breakfast, lunch and the evening meal including morning and afternoon tea. Environmental factors (e.g lightening , sound, space and temperature) will be observed and recorded for each meal service. Some services will use a mixture of meal delivery systems. For example high care could use more tray meals then low care which uses only the dining room. It may not be possible to capture every single meal. Therefore observations will be made where the majority of the service is operating. For example, if the service is using trays into resident's rooms, this will be the service component observed and the wastage observations would be made when the trays were returned to the kitchen/trolley.

Foodservices will be asked to plate up a duplicate resident meal once plating of resident's meals has been finished or provide portion sizes of mid-meal snack items. The nutrition researcher will have her own set of scales to undertake any weighing of portions. So that portion control can be measure to determine the nutritional content of the food and fluids wasted during that meal service. Residents meals must come first and therefore, if a meal cannot be plate up due to lack of food then an estimate will be made of portion size.

The tool represents one day and allows for the meal environment to be observed from Breakfast through to the evening meal including mid-meals. This provides a means of examining the meal environment with different staff, meal delivery systems, meals and different menu items.

What is involved
If you agree to take part in this study, we ask that you complete the consent form *(attached)* that you have read and understood the information provided by this information letter that the nutrition researcher will be spending one day in each meal environment (dining room) within your facility. If your facility only has one dining room the researcher will be in your facility for one day. We understand that if you do not want to take part, that is okay – it is up to you! Choosing not to participate will not have any negative implications.

Will information be kept private?
Yes. We will remove all names from all of the information and assign your facility a code. Only the research team will be able to see this information. Staff or facility names will not be used when we write about the research.

What will happen with the findings?
We will provide you with a summary of the results by email for your continuous quality improvement. The results will also be presented (in de-identified form) at conferences and published in scientific journals.

What's in it for me?
Any finding relevant to improving your services can be discussed informally to your organisation and this could be lodged as party of your continuous quality improvement program. And at any time the nutrition researches can be approached by staff.

The overall results of the study will inform meal environment strategies, menu and foodservices in aged care in the future.

Are there any risks if I agree to take part?
There are no risks to you or your facility in taking part in the study. All results will remain strictly confidential. No facilities will be identified in any of the research or resulting publications. As this study

does not involve the residents, nor does it focus on individual staff there is no risk to any individual. The study is purely examining facility practices and how the meal environment interacts with the menu.

Can you change your mind about being part of the research?
Yes. Facilities can choose to cease there participation in the research at any time. We will respect the facility's decision and destroy the audit tool information and any other information which was provided by the facility. The consent form would also be destroyed and method of record destruction would be made using the organisations procedures that is by shredding or placing information into document destruction bins.

Ethical approval
This study has been cleared in accordance with the ethical review guidelines and processes of the University of Queensland. These guidelines are endorsed by the University's principal human ethics committee, the Human Experimentation Ethical Review Committee, and registered with the Australian Health Ethics Committee as complying with the National Statement. If you would like to speak to an officer of the University not involved in the study, you may contact the School of Human Movement Studies Ethics Officer on 3365 6380 (Dr Tim Carroll). You are also free to discuss your participation in this study with project staff contactable on 0417 608 206 or Karen.abbey@live.com.au.

Thank you for your time

Karen Abbey
PhD Scholar, Nutrition & Dietetics
School of Human Movement Studies
University of Queensland

Appendix ten

Consent form for the FAMET tool and observational study

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

FACILITY CONSENT FORM

Study title: Better practice in food and nutrition services: Menu planning and menu design to deliver optimal nutrition to residential aged care

Principal Investigator: Ms Karen Abbey, PhD Scholar, School of Human Movement Studies, The University of Queensland	Participant's Name/Facility name:	

1. I_____(print name here) consent to the involvement of my Aged Care facility in the above study.
2. I have read and understood the Facility Information Sheet for the above study and I have been informed, in detail, of all of the procedures involved. The study purpose, timeframe, and processes have been explained in detail to me and I have read about these on the Information Sheet.
3. I understand that although the purpose of the study is to improve understanding of optimum foodservice practices in residential aged care, I realise that my involvement in this study may be of no direct benefit to my facility.
4. I have been adequately informed about the risks and benefits of this study. I have had the opportunity to ask questions, and these questions have been answered to my satisfaction. I am aware that new information that develops during the course of the study that may affect my facility's willingness for participation will be passed on to me as soon as possible.
5. I have been informed that all of my information will be kept strictly confidential within the research team and that none of my facility's information will be released. No results that identify my facility will be published in any form or location.
6. I am aware that this study has been approved by the School of Human Movement Studies Human Research Ethics Committee, a representative of the University of Queensland's Human Research Ethics Committee
7. I am aware that I am participating in this study voluntarily and that a copy of this signed consent form will be given to me.

Name of participant (please print)	**Signature of participant**	**Date**
Name of Investigator	**Signature of investigator**	**Date**

Appendix eleven
Ethical approval for FAMET and observation study

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

School of Human Movement Studies
HEAD OF SCHOOL
Professor Doune Macdonald

The University of Queensland
Brisbane Qld 4072 Australia
Telephone (07) 3365 6241
International +61 7 3365 6241
Facsimile (07) 3365 6877
Email secretary@hms.uq.edu.au
Internet www.hms.uq.edu.au
CRICOS PROVIDER NUMBER 00025B

November 06, 2012

Ms Karen Abbey
School of Human Movement Studies,
Connell Building
The University of Queensland
St Lucia QLD 4072

Dear Ms Abbey

Re: ethical review of the following project:

Foodservice and Meal Environment Quality Tool to assess the relationship between the meal environment and how this impacts upon the successful delivery of the menu.

Thank you for the opportunity to review your proposal. I am pleased to let you know that your project has been cleared in accordance with the ethical review guidelines at The University of Queensland. Your approval number is: HMS12/1106.

Please note that:

(i) Amendments to any part of the approved protocol (however minor) should be submitted to me for consideration.
(ii) Signed statements of informed consent should be kept secure in case we need to access them in the future.

I wish you well with your research.

Yours sincerely,

Timothy J. Carroll
School of Human Movement Studies Ethics Committee